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INDIAN COUNCIL OF CONSERVATION INSTITUTES

SILVER JUBILEE CELEBRATIONS

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Conservation of Art Heritage: Past, Present & Future"

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by Dr.O.P.Agrawal.

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A BRIEF NOTE ON PAST, PRESENT AND FUTURE OF CONSERVATION IN INDIA.

O.P. Agrawal

Not too long ago, only some 50–60 years back, just after Independence there were hardly any facilities for conservation of museum objects in the country. There was only the Government Museum, Madras which had established a Conservation Unit long back but it was dealing mainly with conservation of bronze images and other metal objects. The other laboratory which came up was attached to the Museums Branch of the Archaeological Survey of India located at the Central Asian Antiquities Museums at New Delhi. At that time there were hardly 3-4 persons working in this field. There were no training courses, we all worked as interns doing hands on training. Even big museums has not conservation facility. The National Museum was not existing; it was in the planning stage and opened in 1960. Compared to that situation in 1952 scene today is very much changed. Today the number of conservators treating art materials is in hundreds. While in 1950's there were no training programmes, at present a big institution namely the National Museum Institute for Art History, Museology and Conservation is offering in conservation. Government of India is also giving lots of grants for development in museums including for conservation. Several big and small conservation institutions have come up in the country. The National Research Laboratory for Conservation of Cultural Property (NRLC), with a mandate basically for conducting research in the techniques of conservation was established by the Government of India in 1976.

In 1976 the Government of India, Ministry of Education asked me to prepare a report on the status of conservation laboratories in the various museums of

the national level as well as of state level. Accordingly a report was prepared and submitted to the Government of India, which resulted in the development of the conservation laboratories of the Indian Museum, Kolkata, Salarjung Museum, Hyderabad. Laboratories were set up in several states, like in Kerala, Rajasthan, Punjab, U.P., M.P. etc. There still was no non-governmental conservation laboratory.

In 1985, INTACH, a non-governmental organization thought of establishing a conservation laboratory and after much deliberations, the first Art Conservation Centre was set up in Lucknow in October 1985. Spurred by its success, a centre was soon established at New Delhi in 1990 and yet another at Bangalore in 1993. Soon after other centres were to come up at Bhubaneshwar and other parts of India. Today the number of centres under INTACH has reached to ten.

There has been another development and that is the setting up of private practice in restoration. Several private restoration studios were established and are doing very good service to conservation of art objects.

It would thus be seen that there has been a phenomenal growth in the conservation facilities for museum objects. There is a national laboratory for research, there is a training institute offering MA course, there are conservation laboratories with several museums, there are private restorers. But even then one feels that something is missing somewhere. It seems that a spark is missing. Hundreds of training programmes in preventive conservation of art objects have been organized by NRLC, INTACH – ICCI, National Museum and others. Yet, one can find neglect in handling, storing

and display of materials. Objects breaking and getting damaged is a common site, even in museums.

It seemed to us that there was a need for collective thinking on this question. What could be done to improve the situation in every sector of conservation? It is necessary that we ponder over each area of conservation and find out a solution to the problems that are faced by conservation and by conservators.

Let us first of all define what those areas are and then examine how were they in the past, how they are now at present, and what could be done for the future. For me, future is more important, of-course based on our past experience. We need to examine the conservation technology of different types of materials like wall paintings, miniature paintings, contemporary paintings, manuscripts, paper paintings, manuscripts, photographs and so on. Are the methods which are available to us today adequate enough, or there is need for improvement? Are sufficient training facilities available in each of the disciplines? We would want this type of exercise to be taken up as self-appraisal, and not in the spirit of criticism. If conservation techniques are to be improved upon, we need to conduct research in those areas. In my thinking research for improvement of techniques is required in almost all spheres.

Now a days in our country a number of private practitioners in restoration are working. It is a very healthy development, but at the same time some caution is also required. Can any one and everyone be allowed to take up restoration work, whether or not he has received full training? In some countries like Poland no restorer is allowed to undertake restoration work unless he or she has undergone five years training in restoration. We should think about this matter very seriously and arrive at some conclusion.

In our country we have a number of wall paintings starting from 2nd century B.C to the present day. Many of them require conservation treatment. We have some very good conservators who have worked on wall paintings. But a proper training is lacking. Whether it is required or not, for this we have to think about. I know the subject of wall painting is included in the two years degree courses of the National Museum Institute and so also in the six months course of NRLC. But in such a course in which there are so many other disciplines to deal with, wall paintings get very little time. Therefore, we need to think about this matter and see what could be done to rectify such a situation. Conservation of photographs is another area which needs our attention. As far as I know, there is hardly any facility with any of the institutions for full scale work on conservation of photographs and negatives and slides. The technique of digital restoration is available and is used but that is a correction and not really conservation in a strict sense of conservation.

Should there be an institution in our country or atleast a dedicated specialized unit attached to some institution to take up conservation of old photographs and also training and research in that area? The scope is very vast.

Many institutions in our country are taking up conservation of paper manuscripts and books. Undoubtedly, very good work is being done by them. But it seems to me that the process is rather costly. I feel that we should consider improvement of our technology, so that the quality of product is increased but the process becomes economical. I do not know whether it is possible or not, but certainly it needs a consideration. In some institutions research is being done to find out methods for web formation on weak papers. It is still in experimental stage, but has immense possibilities.

Then there are other types of materials, like for instance miniature painting. For the conservation of miniature paintings, there are several difficulties. The green verdigris which chars the paper is still a great problem. When we try to use an aqueous adhesive for relining of a miniature painting there is always a danger of colour-bleeding.

When palm-leaf manuscripts become brittle certain solutions have been recommended to impart flexibility to stiff leaves. Can there be something better. INTACH Bhubaneshwar Centre is using the new palm leaves for filling the broken edges of old palm-leaves. It works very well, but in my thinking that also needs further improvement.

Textile conservation is another area which needs our attention. Very little work has been done in our country in this sector. There are several issues about which we have to think about.

In fact there are many, many problems which require to be addressed. It is not possible to take up to all of them but we can certainly chalk out a direction. Generally speaking the following broad areas of concern are:

1. More number of conservation laboratories in every state
2. Training in conservation of each types of material like wall paintings and textiles.
3. Specialised units for certain types of materials for example wall paintings, textiles, old photographs and so on.
4. Research in some specific areas.

One hopes that during the seminar some new ideas will come up which will guide us in our future efforts.

PAPERS GIVEN FOR PHOTOCOPYING

(100 COPIES)

(ONE SIDE PRINTING WITH PAGE NUMBERING)

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75 pages

CONSERVATION OF VINTAGE PHOTOGRAPHS IN INDIA

Possibilities and Challenges

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1. INTRODUCTION

The dilemma facing preservation of vintage photographs is that they must be studied, handled and displayed, yet these are the very causes that may potentially damage them. Any preservation or conservation attempt must therefore hold this delicate equilibrium together to render photographic collections available for future reference.

This article aims to describe in brief, options and limitations available to a professional conservator while treating, storing or displaying vintage photographs. Vintage photographs are usually defined as ones which were either developed or produced by the photographer himself during his lifetime or were developed soon after the primary negative was produced; it does not include modern prints from old negatives. Photographs and processes active between 1840's and 1950's have largely been discussed in this paper.

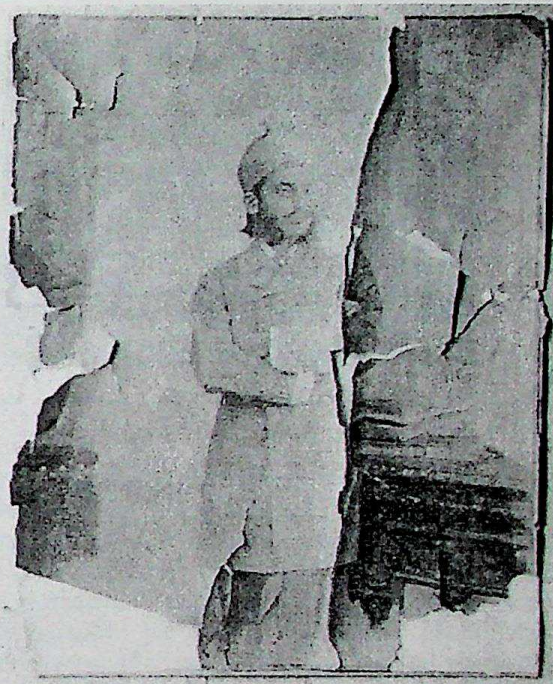


Figure 1. A severely damaged and darkened, hand tinted and varnished albumen print of the Sixth Nizam of Hyderabad, Mir Mehboob Ali Khan. Source: Chowmahalla Palace, Hyderabad.

Beginning with generic conservation treatments, examination and safekeeping guidelines available for photographic collections; this article spans out specific deterioration patterns and possible treatments for historical processes. In no way should this be treated as an absolute document on conservation of photographs. A suggested reading list has been provided at the end to meet extended queries for readers. An attempt to narrow down processes particularly found in India has also been made while describing processes.

2. A BRIEF ACCOUNT OF PHOTOGRAPHY IN INDIA

Photography arrived in India in 1839, the same year in which the first daguerreotype was announced in Paris. During the 1840's sporadic attempts of establishing commercial photographic studios in India met with varied challenges, some survived for long but most ceased to exist. It was only in the 1850's that photography rooted itself more firmly in the Indian subcontinent. The mid-1850, in particular saw major efflorescence of photographic activity in Colonial India through the establishment of three photographic societies- Calcutta, Bombay and Madras, which popularized the medium. At this time the most common photographic process was the paper negative process.

It may be difficult to place the first photograph taken in India; however a convincing possible claimant for the title can be Dr. (Late Sir) William Brooke O'Shaughnessey (1808-1889) of the Bengal Medical Service who had been experimenting with photogenic drawings using the light sensitive properties of gold as opposed to the commonly used silver halides. He had mastered the daguerreotype process as early as 1840 through the press coverages of Daguerre's method all over the world.

Another photographer in practice in the 1840's was the German calotypist, Frederick Fiebig, an artist and lithographer in Calcutta who made nearly 500 calotypes on the views of India, Burma and China, his coloured salt prints were also bought by the East India Company. The pioneering works of early photographers contributed in volumes to the photographic archives still extant in

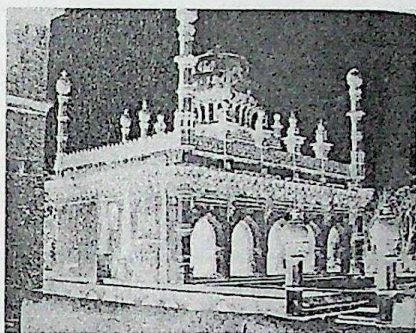


Figure 2. A negative on paper by Thomas Biggs, showing the Mosque of Ibrahim Rauza, Bijapur, 1855



Figure 3. A photographer's travelling darkroom in the 1850's.

the country today. Early photographic explorations in India strongly reverberate with the photographer's search for the 'aesthetic'. John Murray (1809-1898) from the Bengal Medical Establishment produced hundreds of large sized paper negatives with views of architecture in Agra, Fatehpur Sikhri and Delhi, Thomas Biggs (1822-1905) of Bombay Artillery who became an architectural photographer in 1855 and in the first year produced a hundred paper negatives of Bijapur, Aihole, Badami and other sites in western India, and Linneaus Tripe (1822-1902) who photographed the temple architecture of Srirangam, Tiruchirappally, Thanjavur, Madurai and Pudukottai between 1857 and 1858. Architectural photographs and surveys such as these guided the studies of Indian and Eastern Architecture by the landmark historian James Fergusson in 1876.

Apart from photographing monuments, one of the first important events to have found photographic representation was the Uprising of 1857. Many Indian scholars have written extensively on the prolific photographic and visual coverage of the Uprising indexed by colonial aspirations. Between the 1880's and 1890's commercial photography began in India filling visitor's albums and resident's records. Among many post 1857 photographers was Felice Beato in partnership with John Murray and James Robertson who photographed the damaged sites from the Uprising in Lucknow, Kanpur and Delhi. Another remarkable photographic inventory marks the publishing and coming together of the People of India in 1875, an eight part series containing nearly 500 albumen print copy photographs with detailed descriptions of the subjects written by captain .P. Meadows Taylor. The photographs were taken by service men of the civil and military sectors and some commercial photographers.

Photography in India during the 19th century was dominated by Europeans, however, one of the most successful Indian photographers was Raja Lala Deen Dayal. He toured Central India along with Sir Lepel Griffin in 1882 photographing monuments Gwalior, Khajuraho and Sanchi. Later he worked primarily under the patronage of the Nizam of Hyderabad, photographing his royal tours and the grand Imperial Durbar of 1903.

Most early photographic processes came and flourished in India from their respective countries of invention. Some were short-lived, while some lasted for decades and today represent the better part of archives in India. Although, most photographic archives in India are rich in Albumen and Gelatin prints, some earlier mediums such as salt prints, glass negatives and positives, Daguerreotypes and even photomechanical processes such as Photogravures, Woodburytypes and Calotypes are often found in large collections.

3. CONSERVATION OF VINTAGE PHOTOGRAPHS

The faculty of Photograph Conservation is not widespread in India; it has settled into narrow pockets and finds very low institutional representation. There are very few specialists in the field and dissemination of this knowledge has not followed a systematic process. Even academic institutions have only recently included Photograph Conservation in their curricula through workshops and short training programmes. Moreover, a deficit in sharing knowledge has lead to sporadic development of ideas and practices in the field. As a first attempt to standardize basic methods of conservation of photographs, dedicated and consistent educational campaigns will have to be undertaken by heritage preservation organizations and archives. All the information provided in this paper is therefore derived from attempts of conservation and research on photographic collections carried out in institutions in Europe and America; some of these methods have been adopted in India with little or no modification.

When photographs get damaged, there is often a strong desire to restore them to their original state of preservation. However, keeping in mind the sensitive medium of a photograph, almost at all times the probability to improve its condition through curative measures is as dangerous as is, damaging it terminally. There is a very thin line which separates a successful conservation attempt from a potentially damaging one.

Principally, photographs have a cross section comprising of a support which may be metal, glass, textile, paper or plastic. A support carries the image layer. The image layer is usually any photosensitive material suspended in a binding medium (gelatin, albumen or Collodion). A photosensitive material is one which is able to record the effect of light on itself by either, changing colour, structure or form. The type of change on a photosensitive material is then exploited to make a photograph. In most cases this change in form includes silver halides converting themselves into metallic silver upon exposure to light. Many times, the binding layer and the support is interfaced with a ground layer of Baryta or Barium Sulphate which forms a subbing lamina or a smooth cover on a fibrous support and provides a better finish to the photograph.

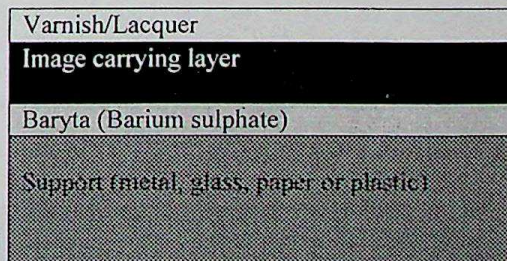


Figure 4. Left: A cross sectional view of a print on Baryta paper showing the milky white baryta layer topped by the glistening silver in the image layer; Right: A schematic diagram of possible layers in a photograph

Photograph conservation can be understood in two ways- digital recovering of the image, where the image from any original photograph is captured digitally and restored via common imaging software like Photoshop; this is mostly done by contriving lost areas in the image in the best possible manner without adding any extra information to the content, and, the other, which addresses actual revival of the original material. In either case, if the original is a vintage object, ethics of conservation guiding the fine arts

regulate conservation of photographs as well. Minimum intervention, photographer's intention and longevity of treatments play a pivotal role in deciding the treatment.

Most conservation treatments are also very specific to the photographic process involved. A thorough knowledge of the same is indispensable in deciding the conservation plan. Historical processes are usually classified as Silver Based, Non Silver Based and Photomechanically produced prints. Silver based processes include photogenic drawings, daguerreotypes, salted paper prints, albumen prints, wet collodion positives, ferrotypes, gelatin and Collodion printed out and developed out photographs. Non silver based photographs include Cyanotypes, Platinotypes, Carbon Prints and Gum-Bichromate Prints. Photomechanical processes include woodburytype and collotype. Photomechanical processes are somewhat different than classical processes, in fact they do not employ the principle of change ensued in a material due to exposure to light. They are more closer to mechanical graphic printing.

4. EXAMINATION AND IDENTIFICATION

Any photograph that has been received for conservation poses a very preliminary challenge to the conservator—that of identifying the process with which it has been made. Historical photographic processes are chemically complex and exhibit very unique deterioration patterns. Identifying the process correctly is the most important step towards planning for their conservation. This usually comes with experience and may be supported by scientific analyses and study. Often the type of deterioration may guide the character of a photograph, for example it is quite common to see severely curled up loose albumen prints, particularly in climates of the tropic where temperature and moisture levels fluctuate.

In order to identify the photographic medium to be gelatin, albumen or Collodion, a spot test may be useful. A non significant area may be chosen in the photograph and a small amount of water may be absorbed in a microswab and placed on the testing spot. This wet spot on the photograph may be left as is for 5 to 10 minutes. The drop of water may be re-absorbed by the swab after 10 minutes. The wet area is then examined in raking light to see its surface properties, a magnifying glass or a stereo-microscope may come in handy for this purpose. If the area shows swelling with water, it is gelatin, if the area shows swelling with alcohol it is collodion and if neither effect the surface it is most probably albumen.

Spot tests cannot be considered to be confirmatory in nature, most photographs with a closer look will give enough information about their nature and process. A binocular magnifier, ideally with 30 x magnification can reveal a lot. The colour and surface finish of the photograph can also help identify them. Photographs which are directly formed on the paper can be seen under a magnifier to reveal the paper fibres which are easily visible. This may be noticed in salt prints, photogenic drawings, cyanotypes or platinum prints. Photographs that have two image forming layers can be seen as a translucent layer through which paper fibres are still visible; albumen prints, carbon prints and gum-bichromate prints may be identified in this way. In cases where there are three layers including a baryta (barium sulphate) layer as ground on paper support, a magnified view reveals only a smooth glossy surface of the photograph with no evidence of the paper fibres.

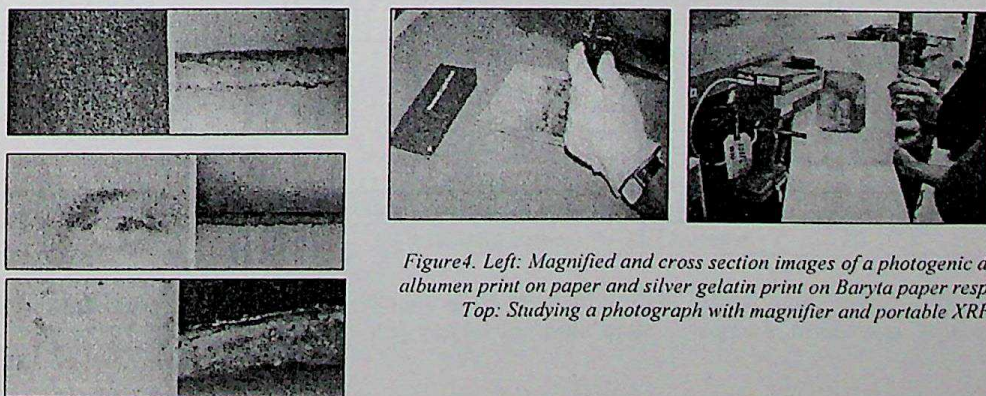


Figure 4. Left: Magnified and cross section images of a photogenic drawing, albumen print on paper and silver gelatin print on Baryta paper respectively. Top: Studying a photograph with magnifier and portable XRF.

Further, more scientific studies can be employed in studying photographs. For example an FTIR- ATR (Fourier Transform Infra Red - Attenuated Total Reflectance) can identify the binding medium in a photograph to be gelatin, albumen or collodion. A cross sectional analysis can reveal the various layers in a photograph and an X Ray Florescence study can reveal the kind of metals that have been used in the photosensitive image layer or otherwise. A portable XRF is a non destructive equipment which can identify metals in less than 30 seconds.

5. COPYING AND DIGITIZATION FOR DOCUMENTATION

One of the first steps in conservation of any photograph is to make a copy. Even a decade earlier, this was done by photographing the original with a standard film camera using appropriate panchromatic filters. A copy is usually made without using flash. In the present times, digitally photographing the original results in a copy image file. This could be done either by using simple digital cameras or by using high end copy to copy cameras to get photographs with least distortions. It is usually not recommended to scan originals using deskjet or even drum scanners as this leads to sharp exposures to very bright white light. However, recent research argues that if the scanner employs LEDs (Light Emitting Diodes) as the primary source of light, the chances of UV emission are nil and in that case, originals can possibly be scanned. Since this study is presently incomplete, as a precaution, original photographs should not be scanned for making copies. In any case before making a copy the photograph should be lightly brushed using a camel's hair brush to remove dust particles which may interfere with the copying action. No digitization must be done in natural light. To control UV levels in a natural light source is very difficult, ideally artificial lighting must be employed while making copies and exposure times must be regulated.

6. REGULATING THE ENVIRONMENT FOR LONG TERM PRESERVATION

For a mixed collection of photographs, the Relative Humidity (RH) may be maintained at 30 to 40%. It is best to use electronic hygrometers to check humidity levels. Colour indicating systems such as Silica Gel are crude and should be strictly avoided. Instruments used for humidity indication should be calibrated from time to time. Commercial temperature regulation systems (air conditioning or otherwise) can also provide with manned and computerized environment controlling systems for large collections.

Black and white photographs can be safely stored at 21-25 Degree Centigrade. For colour prints the temperature must be reduced by 10 Degree to prevent damage. Normally a 10 degree decrease in temperature is proportionate to almost 3 times more life expectancy of a photographic print. For temperature sensitive photographs, the print may be placed in an acid free envelope which is placed inside an acid free box and the box is sealed in a double layer plastic interleaved with a humidity indicator strip. This ensemble can be placed in a frost free refrigerator. This process has been followed for small collections where blanket temperature regulations are not possible. The following table describes the ideal temperature and humidity levels for long term preservation of black and white photographs.

TYPE OF PHOTOGRAPH	SUPPORT	PROCESS	MAXIMUM TEMPERATURE	RELATIVE HUMIDITY
Black and White	Glass Plate	Albumen Collodion Gelatin	18 Degree C	30-40%
	Paper	Gelatin Silver Paper	18 Degree c	30-50%
	Cellulose Triacetate	Gelatin Silver	7 Degree C	20-30%
	Polyester	Gelatin Silver	21 Degree c	20-50%

Usually gelatin silver developed prints are quite resistant to light fading, nevertheless if they have been developed wrongly, residual fixers may render the print quite susceptible to damage. Albumen prints,

photogenic drawings, salt prints etc are very prone to light damage (see later sections). Ideally the total light falling on a photograph should never cross 50 Lux and the UV concentration should not be more than 75 microwatts per lumen. Natural light sources should be completely avoided. Light sources such as fluorescent lamps and tungsten lamps which have a tendency to exude UV rays should not be used.

7. STORAGE SOLUTIONS

Care should be taken that the physical area that has been chosen for display or storage of photographs has not been recently painted. Many alkyd paints release Volatile Organic Solvents (VOC's) which may harm silver based images turning them yellow. The storage area should be dust free and photographs should be stored following the principle of 'layered enclosures'. The cupboard or storage case is the outermost layer in a micro-storage structure. A cupboard may be made up of metal or wood but should be covered completely with a laminated sheet or any surface that has been heat finished. It should not be painted or polished. Even better would be an anodized aluminium, plated steel or steel coated with a heated finish cupboard.

Individual photographs can either be placed inside a paper envelope or a PET (polyethylene terephthalate) sold under the trade names of Melinex, Mylar or Secol. A PET is a very good option for photographs which need regular referral as they are transparent. A PET may be formed into a proper envelope, a sleeve (open from two ends) or be completely sealed from all sides. Alternatively, acid free paper can be used as it has the advantage of not sealing the photograph hermetically, allowing it to breathe. Normally buffered paper or papers with alkaline reserves may be deteriorating for some historical processes and should be avoided. One should avoid putting photographs in polythene sheets since they usually have plasticizers which are harmful for photographs. After wrapping an individual photograph, it should be placed inside an acid free box, also called a solander box, designed and constructed for storage of photographs. Care should be taken that not too many photographs should be packed inside a solander box. Depending on the depth of the box-50 or 60 photographs can be safely placed inside one box. Ideally each photograph should be matted by fixing it with photo-corners on an acid free mount which in turn can be put into a sleeve or an envelope. This gives each photograph a rigid backing.

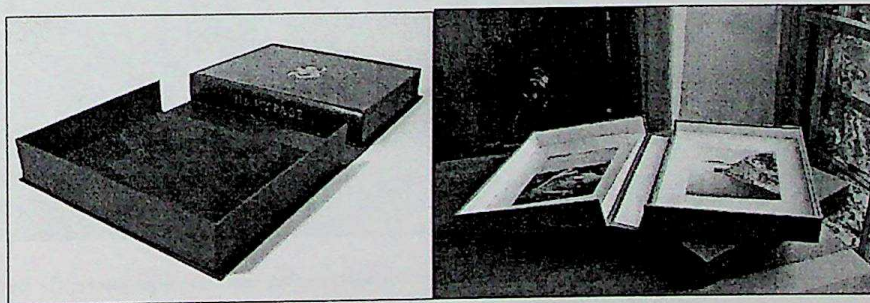
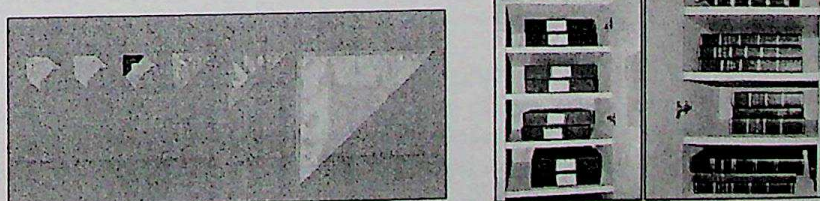


Figure 5. A solander box is an archival box made up of acid free mount-board for storage of photographs

Photographs can also be stored in Albums but in such cases the paper used to make the album must conform to standards for acid free archival paper. Photographs may be mounted on the album into Mylar photo corners so that no adhesive comes in contact with the photograph. Fixing photographs by placing localized adhesive on their backs is a seriously damaging factor particularly for gelatin prints. If the entire photograph needs lining then a professional conservator must be approached. Options for lining have been described in later sections.



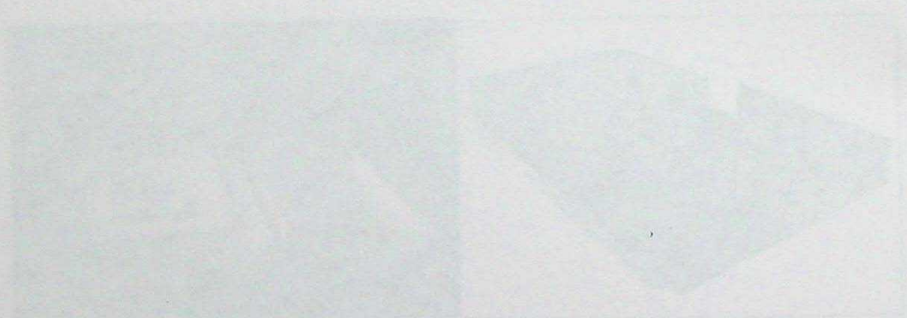


Figure 7. Left: Mylar(PET) photo corners for hinging archival photographs; right: Storage of Solander Boxes and Albums in archival cupboards at Alkazi Foundation for the Arts, Delhi

If any marking is required on a photograph, it should be done with a soft HB pencil. No pens or inks should be used to mark originals.

8. CLEANING AND STAIN REMOVAL

Cleaning any photograph is a very sensitive treatment. Since photographs are prone to finger-prints, they should be handled at all times using cotton gloves. Loose dust and dirt may be removed from a photograph by mildly brushing with a Goat's hair brush or a Camel's hair brush which have a strong electrostatic property to attract dust particles. In the absence of either, soft cotton balls may be used to remove dust and dirt by gently rolling or rubbing on the print, changing them frequently. This can be done on both sides of a photograph- the emulsion and non-emulsion side. The back of prints can also be cleaned using eraser powder by gently rubbing them until the powder discolours. The process may be repeated. Eraser powder should not be tried on the front side or the 'emulsion side' of a photograph or negative. If available a suitable Film Cleaner (available commercially with Kodak) may be used to clean the front or the emulsion side with a cotton swab, please note that this is applicable only for silver gelatin positives on paper and no other historical process. The Film cleaner should however not be used at the back of the photograph. A microfiber cloth is also very useful in cleaning photographs, available for cleaning Cds. Eraser cleaning should not be used in cases where the photograph is painted as this may dislodge pigment particles from the front.

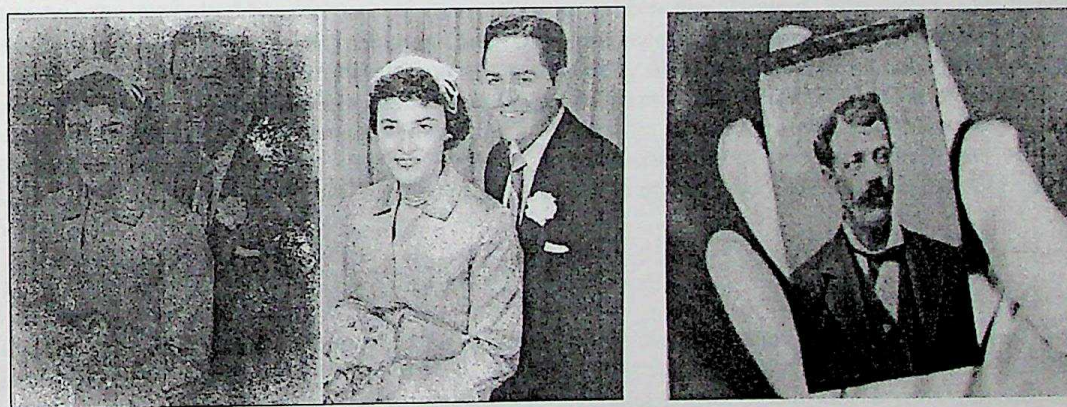


Figure 8. UV photograph of a silver gelatin positive on Baryta paper shows fingerprints due to bad handling, photographs should be handled at all times wearing cotton gloves

Often vintage photographs are varnished from both sides and in such cases dry cleaning may not lead to satisfactory results. Cleaning prints with water and cotton swabs is usually discouraged as this can swell the medium, particularly when it is gelatin and damage it. Alcohol may damage the medium if it is Collodion based and therefore should be avoided.

It is to be noted that all wet cleaning of photographs is to be done with care and avoided in most circumstances. No photograph should be cleaned with water or chemicals when it is on mount or stuck to an auxiliary support. Molecular traps (Groomstiks) may be used for more ingrained dust and dirt from the photographs followed by cleaning with a soft cloth or a dust-bunny cloth.

The best way to remove stains from photographs is to digitally remove them from the digitized copy. Any attempt to physically clean them may lead to migration of inks. The Getty Conservation Institute after carrying out research on treated photographs has concluded that old conservation treatments involving washing, bleaching with potassium permanganate and redeveloping a photograph causes various

permanent damages to the image layer leading to fading and loss of image contrast. In present times they are strongly discouraged.

9. REMOVAL OF FUNGUS FROM PRINTS AND NEGATIVES AND INSECTICIDAL TREATMENTS

Fungal growth on a gelatin based print usually renders the gelatin extremely soluble in water. In such a case the print should never be treated using water. In the preliminary stages of fungal infection may appear as matte and dull spots on the print. This can be removed by dry methods using a soft cotton swab or by chamois leather sparingly soaked in commercially available film cleaners. In an advanced state of deterioration, the fungus may have damaged the emulsion to a large extent and then the only possible way of restoring the image is to digitally correct it. All auxiliary material in contact with the print must be destroyed.

Cleaning negatives and glass plates when effected with Fungus can be done in much the same way as is done for the prints. In many cases, particularly in negatives processed prior to 1970, a layer of lacquer may be present on them. This layer can be effected by fungus, in such a case the layer can be removed (similar to removal of varnish in oil paintings) by dipping and agitating the negative in a solution of denatured alcohol and few drops of ammonia.

The most successful insecticidal treatment for photographs is treating them with ethylene oxide but because these are highly carcinogenic gases, they have been discontinued. The insecticidal treatments used in present times employ creating anoxic environments or treating photographs in very low temperatures. Low temperatures, below zero are terminally dangerous for insects and therefore may be used. Here it is important to understand that creating a vacuum is only permissible if the photograph is not wet as this may lead to problems of condensation. Normally, photographs are packed in double layered bags and placed in a freezer for 48 hours. Creating anoxic environments (lacking oxygen) may be done by using Ageless or inert gases, but these are more expensive options and may be affordable only for large institutions.

10. SEPERATING PHOTOGRAPHS FROM MOUNTS

On many occasions vintage photographs are stuck to acidic mounts which may need be removed. This is best done mechanically, but if the adhesive used is strong and damaging then other methods need be incorporated. In case of gelatin based photographs, reversing from a mount may involve introduction of moisture. This should be done very carefully, ideally employing an ultrasonic humidifier which provides a thin uniform mist of moisture. Alternatively, it can be moistened by using GoreTex¹ in order to soften the adhesive followed by mechanical removal. Albumen prints can be wetted through the mount using brush and water, a Collodion print may be placed face up on a wet blotter to induce slow and uniform moisture into the mount to separate it. In cases where the mount cannot be excavated from the back and must be preserved, the best option is not to separate the photograph and the mount. Dipping a photograph in a water bath should be avoided at all cost.

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1. Gore-Tex is a waterproof/breathable fabric, and a registered trademark of W. L. Gore and Associates. It was co-invented by Wilbert L. Gore (1912–1986), Rowena Taylor, and Gore's son, Robert W. Gore. Robert Gore was granted U.S. Patent 3,953,566 on April 27, 1976, for a porous form of polytetrafluoroethylene (the chemical constituent of Teflon) with a micro-structure characterized by nodes interconnected by fibrils. It has the property of releasing moisture in the form of vaporised water. Industrially it is used in water proof linings of jackets and is now increasingly being used in conservation treatments requiring sparing amounts of water treatments.
 2. Tyvek is a brand of flashspun high-density polyethylene fibers, a synthetic material; the name is a registered trademark of DuPont. The material is very strong; it is difficult to tear but can easily be cut with scissors or any other sharp object. Water vapor can pass through Tyvek (highly breathable), but not liquid water, so the material lends itself to a variety of applications.

11. REPAIR AND LINING OF PHOTOGRAPHS ON PAPER

Tears and folds may be repaired by using archival document repair tapes. If these are not available, an acid free tissue can be impregnated with starch paste (archival and gluten free) and left for drying. Once dry the area to be repaired on the photograph may be flattened under pressure. The dry adhesive laden tissue may be placed on a wet blotter for a few minutes to regenerate the adhesive which can then be neatly pasted along the tear line. Alternatively an ultrasonic humidifier can be used to regenerate the adhesive in the tissue and repair should be done on the torn area, employing pressure. In cases of repairing photographs the best way to apply pressure is through thick (2-3 cm at least) felt piece covered with Tyvek². Repaired photographs need extra care in storage and must all times be backed or hinged to an acid free mountboard. The entire photograph should be placed under pressure, local pressure or burnishing should be strictly avoided.

Photographs should be lined only when there is no other option available to preserve them. This should strictly be done using regenerative lining techniques using starch paste or Methyl Cellulose. In this case the lining paper is prepared by coating it with a thin layer of wheat starch or methyl cellulose. The ensemble is allowed to dry under pressure until completely dry (a similar method for preparing the lining support as used for any paper object may be used). The prepared lining paper is then placed adhesive side up on a blotter interfaced with GoreTex and the photograph is placed face up above it. The entire system is then placed under a Mylar sheet. The lining paper absorbs moisture sparingly regenerating the starch adhesive. Atmospheric pressure on the Mylar sheet is usually enough to help stick the photograph which can be further flattened with a soft rubber squeegee when semi-dry. During this operation the photograph should be checked from time to time for any possible stains. Care should be taken that the photograph should not have uneven surfaces or deposits at the back, in such cases the photograph should be first cleaned properly from the back or left unlined.

12. DEALING WITH DISASTERS

Water disasters like floods may often leave large collections of photographs in an extremely vulnerable condition; particularly if the photographs employ gelatin and albumen as their mediums. In such cases the first recovering option is to air dry the entire compromised collection. All effected photographs should be separated and placed on blotters to dry. Negatives can be hung on strings to drain away water and dry. In a water disaster the prints are quite vulnerable to get fingerprints, hence soft rubber gloves must be used while handling them. Air drying requires large open areas, if this is not possible for the entire collection, the remaining collection can be stored in ploythene bags or Mylar bags and put in a refrigerator (ideally at -30 Degree Centigrade) until there is time to thaw them and air-dry them. Normal refrigerators in India cannot give such low temperatures but refrigerators used for storing meat can often give such scales. Care should be taken that photographs are not vacuum dried as this can often lead to a whitish ghost image on photographs.

Fire disasters will often leave photographs in a condition from which they cannot be retrieved. Nevertheless any dehydrated un-burnt photograph may be revived by slow and steady moistening over a long period of time.

13. SOME EARLY PHOTOGRAPHIC PROCESSES IN INDIA AND THEIR PRESERVATION

It has been indicated earlier that photographs are produced through extremely complex chemical interactions. As a result many specific processes may react in a different manner during ageing and deterioration. It is therefore important to know these specific photographic processes and the process specific defects to be able to treat them successfully.



13.1 SILVER BASED PROCESSES

13.1a PHOTOGENIC DRAWINGS (1834-1840)

A photogenic drawing is a photograph obtained from placing an object in direct contact to photosensitive paper. The paper is made sensitive to light by coating it with a solution of sodium chloride (table salt) and then with silver nitrate to form a silver halide. When exposed to light the paper darkens in areas which are not covered by object leading to a 'negative' appearance as compared to the original (see image below). The exposed areas turn brown and the non exposed areas remain white. The image is stabilized by dipping it into a saturated solution of sodium chloride, but is never completely fixed, therefore photogenic drawings are extremely delicate materials, always prone to changing colour even with slightest exposure to light.

Conceptualized by Thomas Wedgwood (1771- 1805) in 1802 and discovered by William Henry Fox Talbot (1800-1877) in 1834, the photogenic drawings are rare within Indian Collections, nevertheless wherever they exist, the demand great care and protection from light. These drawings should never be displayed in light unless absolutely important, ideally they should be stored in complete darkness. If done so, they can be displayed in very low diffused light. There is also a tendency for the photogenic drawings to lose image contrast and turn yellow particularly in humid environs when exposed to light.

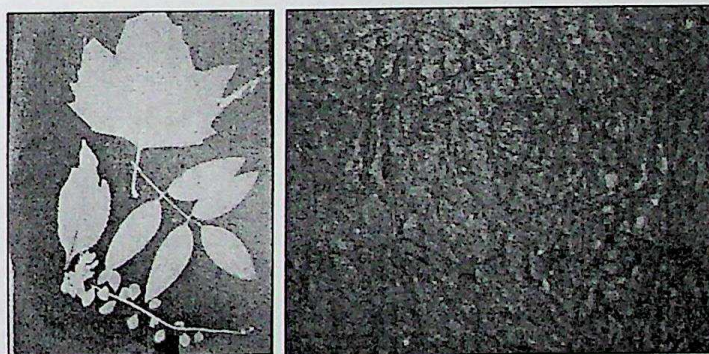


Figure 9. A Photogenic drawing and its magnified image

13.1b DAGUERROTYPES (1839-1860)

One of the earliest photographic processes, the daguerreotype process consisted of a silver-coated copper plate that was sensitised over fumes of iodine and was then exposed in a camera. In the exposed areas, the silver halide was converted to metallic silver. The image was developed by exposing the plate to mercury fumes, which reacted with the metallic silver and brought out a relatively lighter silver-mercury amalgam image on the surface. This was then fixed in sodium chloride (later sodium thio-sulphate), washed and dried. Formed on a silver-coated layer on one side of the copper plate, the daguerreotype has the most exquisite image qualities in photography: a range of lustrous, silvery tones unattainable by any other process. The image is a unique direct positive; it cannot generate multiple identical copies. The process was first used in India shortly after its announcement in Europe and daguerreotypes continued to be produced until the late 1850s. The daguerreotype image was made on a metal sheet and despite the beauty and detail of the image, which was often hand-coloured, it suffered from a number of drawbacks which ultimately led to its demise. The most important of these was the fact that each image was unique and could not be reproduced except by making another exposure. In addition, the image itself was laterally reversed, which became a major limitation, particularly for landscape or architectural subjects.



Normally a daguerreotype is put behind glazing and mounted within a brass frame. This protects the delicate image which is otherwise prone to staining, finger-prints, abrasions and of course tarnishing as copper is a reactive metal. Moreover, Silver can react with Sulphuric gases in the atmosphere and get tarnished very easily.

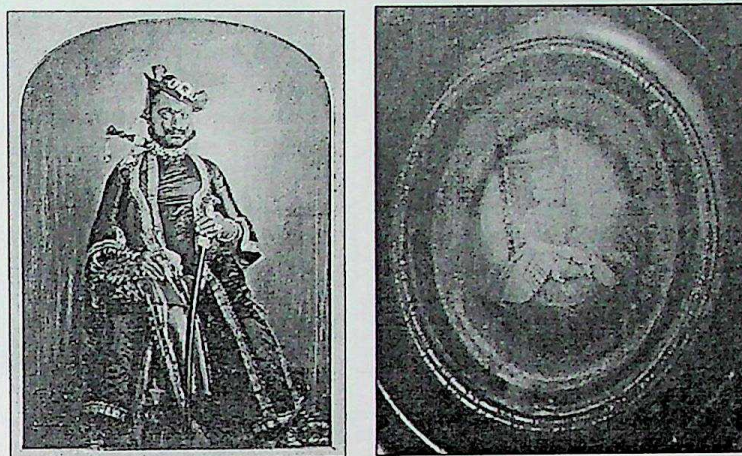


Figure 10 Left: Unknown Photographer, Daguerreotype portrait of Jaswant Rao Ponwar, Raja of Dhar, early 1850s; Right: A tarnished copper plate in a hand coloured Daguerreotype showing advancing of the corrosion from the outer periphery inwards

Among much deterioration, an unframed Daguerreotype can quickly accumulate large amounts of dust and dirt on them. Liquid or abrasive cleaning techniques should not be attempted on daguerreotypes. The surface is very delicate and therefore it should not be touched by bare hands. It is inadvisable to use any of the treatments usually carried out for restoring corrosion of copper on the daguerreotypes as they are considered to bring about micro-structural damage to the image surface which is reversible. The only safe option to preserve them is to encase them. They should be neatly encased in glass sealed on edges with acid free tapes to protect them from reacting with moisture. Very mild dusting using a soft airbrush can be used to dislodge loosened dust particles. No abrasive cleaning, even with swabs should be attempted because most daguerreotypes, particularly hand-coloured varieties have very loosely bound pigment particles, they may get damaged.

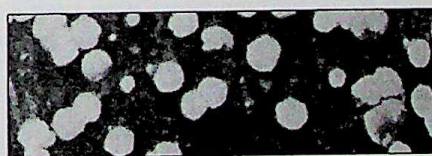


Figure 11. Left: A stereomicrograph of daguerreotype showing silver particles in the photolytic form.

13.1c WET COLLODION POSITIVE/AMBROTYPE (1852-1870)

The Wet Collodion process invented in 1848 by F. Scott Archer (1813-1857) replaced the daguerreotype instantly. The wet Collodion negative is comprised on a glass plate coated with Collodion, a syrupy mixture of gun cotton dissolved in a mixture of alcohol and ether to which potassium iodide is added, further coated with a solution of silver nitrate. This Silver nitrate in combination with the potassium iodide formed the light sensitive Silver Iodide which would capture the image when the plate was placed in the camera. The plate was kept in the camera when it was still wet, hence the name. Once partially exposed to light, the negative was removed and protected with varnish so that the plate was ready to produce positives. Sometimes, of course the plate was preserved as is as the final positive and in this case put in front of a dark background which made it look like a positive.



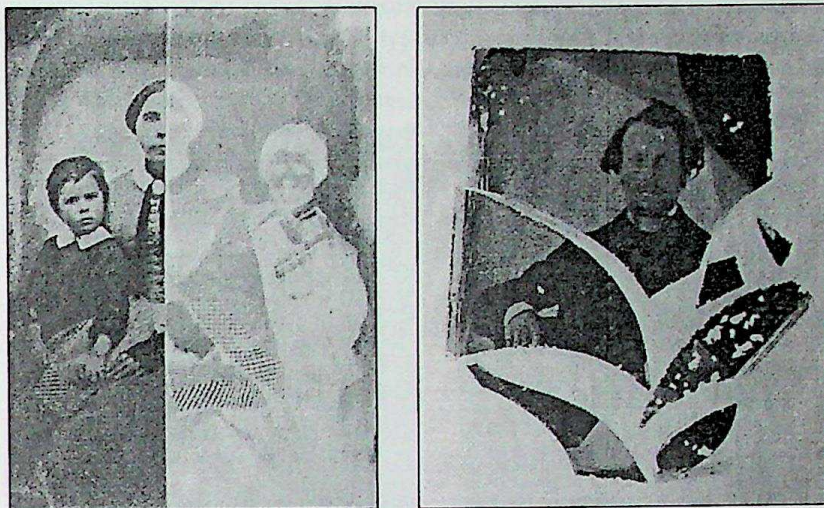


Figure 12: A wet Collodion negative partially backed by a dark paper converts it into a positive;
Right: A broken wet Collodion Positive

Normally the wet collodion negative plate is chemically quite robust because the silver iodide is in a thick layer of collodion and is physically developed and not photolytically. Therefore the image tends to hold its detail longer and remains stable. Glass, of course being a delicate material itself tends to get damaged by shock quite easily.

The Wet Collodion positives should ideally be cleaned with dry brush or air pressure. At the most the emulsion side may be gently wiped with a non-ionic detergent solution in water followed by thorough cleaning with water. If there are losses in the backing paint, the paint can be restored or the backing changed.

The problems of conservation of Wet Collodion positives are similar to glass negatives. The most common defect found in them are silver sulphide stains due to oxidation. The backing should be removed, if varnished or painted at the back may be checked for sensitivity to water. The emulsion side can be washed with water followed by wiping with a solution of distilled water and Non-detergent Ammonia (5:1 ratio) followed by wiping with a mixture of distilled water (500 ml), Thiourea crystals (19 grams) and Phosphoric Acid (10ml). The plate should be rinsed immediately with tap water and then re-fixed with a commercially available fixer followed by thorough washing and holding in light. This removes most of the sulphides but if not, the process can be repeated.

13.1d FERROTYPES/TINTYPES (1853-1930)

A ferrotype, also often misnomered as a Tintype was similar to the Wet collodion plate with the variation that instead of a glass plate, an iron sheet was used. The iron sheet was coated with dark coloured lacquer which was then coated with Collodion containing silver salts. In case of tintypes as the substrate is iron there may be signs of 'rust blisters' on the surface of the image, the back of the plate or even rust spots on the paper mount itself. Loose and card-mounted (matted) tintypes could be easily damaged by bending. The colloid cracks along the line of bending and eventually flakes off. These breaks in the colloid will also let the moisture come in contact with the metal sheet underneath causing rusting and blistering of colloids around that. With age, the varnish on the surface darkens and when the temperature fluctuates and swings between extremes, the varnish may crack and flake off taking the image with it. Hand-coloured daguerreotypes, ambrotypes and tintypes etc., are prone to fading if exposed to light for long periods.

Good storage is the best type of Preservation step for these photographs. The iron can rust severely if not stored properly and in dry conditions. IN severe types of conditions, the Ferrottype image can completely flake away from its iron support. These photographs are best preserved in a encasing buffered with an acid free card board which can absorb extra amounts of moisture.

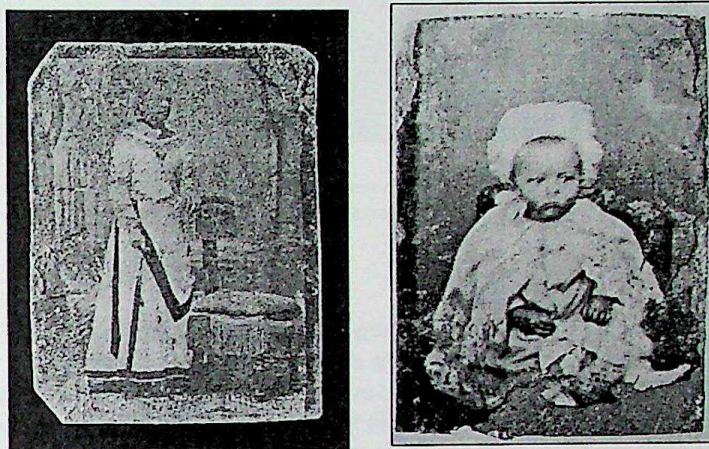


Figure 13: Two examples of damaged Tintypes, advanced levels of rusting have lead to pulverization and flaking of the image layer respectively.

13.1e SALTED PAPER PRINTS (1840-1860)

Invented by William Henry Fox Talbot in 1840, Salt prints were the earliest positive prints. They were developed from the earlier photogenic drawing process. A salt print was made by soaking a sheet of paper in salt solution and then coating one side with silver nitrate. This produced light sensitive silver chloride in the paper. After drying, the paper was put directly beneath a negative, under a sheet of glass, and exposed to sunlight for up to two hours. Salt prints were made until about 1860 having been gradually replaced by the albumen print which gave a clearer image. The only difference between a salt print and a photogenic drawing is that the prior is made by placing the actual object on the photosensitive paper while the latter is printed out by exposing it through a negative which may be in the form of a glass plate or even a waxed paper.

Salted paper prints have a simple, binder-less print structure and respond to humidity changes quite similarly as any other fine quality, machine-made paper. The photolytic silver image on a salted paper print is formed in the topmost paper fibres, and it can be damaged when the fibres are abraded or when the paper is flexed too much that ruptures the fibres. Many characteristics forms of paper deterioration may be present in these prints, including foxing, discolouration, stains, weaknesses, brittleness, thinned areas, and tears. Surface grime and dust are also common problems.

Photolytic silver (literally meaning separated from light) is characteristically unstable. In its original state, the salted paper image is brown or reddish-brown in colour; and when gold-toned, it is purplish brown. The symptoms of oxidative-reduction deterioration in them are loss of highlight detail, overall fading, and a change in image hue toward red or yellow shades. Edge fading is common to salt prints and is caused by the fact that moisture and air have access to images from the edges when prints are piled in stacks or mounted in albums. Sulphiding leaves salted paper prints completely faded, with a greenish-yellow image hue and often with stained non image areas. Salt prints are best stored in protective envelopes with little or not exposure to light. They must be displayed only when absolutely necessary, protecting them with tinted glass or UV protective glass.



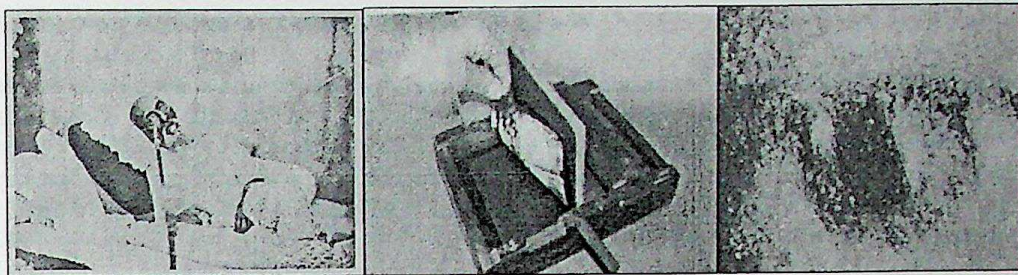


Figure 14. Salt print of Bahadur Shah Zafar in the Alkazi Collection of Photography; A contraption for producing contact prints from a paper negative and a magnified view of a salt print.

13.1f ALBUMEN PRINTS (1850-1900)

Albumen prints are very common in Indian photographic archives. An albumen print is a positive photograph with an albumen binder layer that holds a silver image and is supported on a sheet of paper. The image is printed out, toned with Gold and then fixed and washed. Although the surface of an albumen print is only moderately glossy, it can be made highly glossy by treating it with wax or varnish. Albumen prints were often mounted on card boards in different sizes, the most common ones being cabinet cards and *carte-de-visites*.

Albumen has a tendency to crack as it dries so the print may be covered with tiny fissures or cracks which can sometimes be seen with the naked eye. Cracking is attributed to the fact that the hygroscopic paper base tends to expand with absorption of moisture while the hardened albumen remains static, this induces cracks in the relatively plastic albumen layer.

The tone of the prints range from a reddish-brown to a deep purplish blue depending on the amount of toning received. The image has cream coloured highlight areas that can be noticed if the print does not exhibit yellowish discolouration and fading. The fading normally occurs from the edge of the print towards the centre. Although Albumen prints are less prone to fading than salted prints because the albumen layer protects the silver, nevertheless lighter or highlight areas which have little silver may be prone to fading. The major forms of deterioration in albumen prints are changes in the photolytic silver image, embrittlement, staining and yellowing of the albumen layer, and the structural problems leading to severe cracking and fissuring of the albumen layer. Yellowing of albumen prints has been reasoned for the change in the silver-albuminate compounds and also sometimes due to the decomposition of the albumen protein itself. Both excessive humidity and light can accelerate this process.

Often an albumen print can be severely damaged by its lining cardboard backing or mount which are usually highly acidic. A conservator may successfully remove the backing if needed but as the prints themselves are on very thin paper supports, it may make the task difficult. Using an ultrasonic humidifier to dampen the mount from the back and mechanically working outwards may help. In no occurrence should the mount-photograph ensemble be dipped in a water bath.

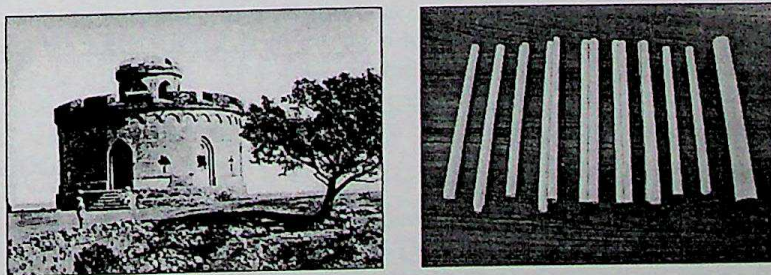


Figure 15. Albumen print and a rolled state of albumen print due to fluctuations in relative humidity

13.1g PRINT-OUT PHOTOGRAPHS/POPs (1860-1940)

Print out photographs, also called POP was the first pre-sensitized photographic paper manufactured industrially. It first appeared as a Collodion silver chloride paper manufactured in 1885 in Germany. Generally a POP paper has a paper coated with gelatin mixed with a white pigment (Baryta or Barium Sulphate) that gives the surface a smooth white finish. The final photograph is a printed out image rather than a developed image and is contained in an image-carrying layer made of a variety of binders-gelatin, Collodion, casein, starch or even albumen. Therefore an ideal POP print has three layer-support, Baryta and the image carrying medium.

The final print could be produced by keeping the POP paper in contact with a negative and exposed to light. This would result in formation of the positive, which was then run through a series of fixer and toner baths to obtain the final result.

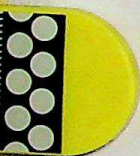
Collodion printing-out papers deteriorate principally as a result of structural problems, abrasion of the Collodion layer, or changes in the photolytic silver image. Collodion layers are neither flexible nor permeable to water. As they do not absorb moisture and swell as the paper support and baryta layer do, stresses can be generated when changes in humidity make the support expand or contract. Such tensile or compressive stresses and inherent brittleness lead to the formation of hairline cracks and fractures in these prints, especially in glossy ones. Flexing of print also develops cracks in the inflexible and brittle Collodion layer. The cracks do not widen to form fissures as they do in albumen prints, as they do not respond to moisture the way albumen does. However repeated cycles of expansion and contraction of the support can lead to separation and flaking of the already cracked Collodion layer.

Un-mounted gelatin printing-out papers are subject to the same curl problems that afflict all prints with gelatin binders. The expansion and contraction of gelatin binder due to changes in relative humidity are much greater than those of the paper support. Depending on the thickness of the support, curling occurs inwards (towards the gelatin layer) under dry circumstances and outwards (towards the support) when the gelatin expands under humid conditions. Dimensional changes in gelatin prints due to changing moisture content cause numerous plane deformations if prints are mounted with only a few spots of adhesive rather than with a relatively uniform coat. This restraint sets up localized stresses that lead to puckering or even tearing of the print in the area of adhesion. Under moist conditions, gelatin absorbs water and becomes sticky and soft. If high humidity conditions prevail during extended storage, the surface character of prints can be modified by contact with smooth plastic enclosures, such areas may look glossier than the surrounding ones; the gelatin binder may even adhere to the enclosure and fibres may get stuck in them if the enclosure is paper. Softened emulsion gets stuck on to glass if the photograph is framed without an overmat separating them.

13.1h GELTAIN DEVELOPED-OUT PHOTOGRAPHS/DOP (1880- till present)

A gelatin developing out paper is a photograph that is developed in a developer solution, in contrast to the printing out papers. A brief light exposure produces a latent image that is amplified and made visible in a developer bath. The image-carrying layer is always gelatin on a Baryta and paper support. IN this acse the paper is prepared by treating it with two gelatin solutions, one containing silver nitrate and the other containing a bromide or chloride. As a result a whitish suspension of photo-sensitive salt is produced which remains in the coated paper. Developing out paper can be only developed under 'safe light' or red light as they are sensitive to blue light. The negative is either projected through a projector or is kept in contact with the DOP.

One exposed the paper needs to be developed in a developer bath followed by fixing with a thiosulphate solution to render the silver halide un-reactive. This should then be washed well as remains of thiosulphate fixer can often lead to deterioration of the DOP. One of the most common deteriorations in the DOP papers is that of Silver mirroring. In this event silver particles tend to travel to the outermost layer of gelatin and get deposited. It is usually seen in the darkest areas of the print.



The various types of gelatin developing-out papers made during the last fifteen years of the 19th century include bromide, chloride and chloro-bromide papers. All have the same laminate structure and share the set of problems deriving from the physical properties of gelatin. Curling, plane deformations, defective mounting techniques, and surface characteristics described in the gelatin printing-out papers are also typical of gelatin developing-out papers. The chemical composition of the image and its relative particle size do not affect the physical properties and response to humidity changes of the binder and support components. Image deterioration in gelatin developing-out paper follows a different course than in printing-out papers because of the structural differences between the filamentary and photolytic silver particles forming the image. The filamentary silver formed in the process of development was deposited as slender twisted strands. Each particle consists of a bundle of intertwined filaments that are huge in comparison with the small spheres of photolytic silver particles. The most common types of image deterioration are caused by *sulphiding* due to improper processing and by an oxidation-reduction process.

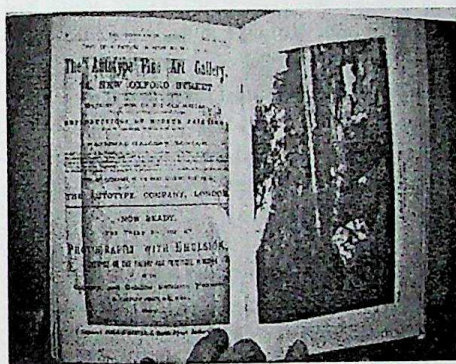


Figure 16. Transfer image on paper in contact with a Platinum print



Figure 17. A pannotype, front and back

13.1i PANNOTYPE (1853-1850)

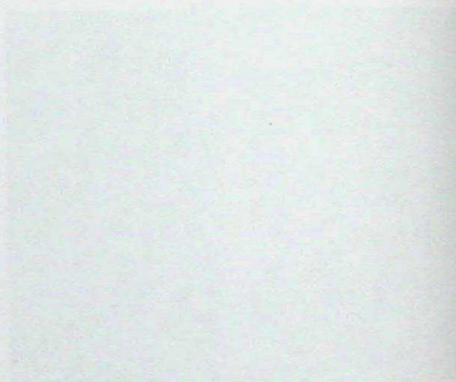
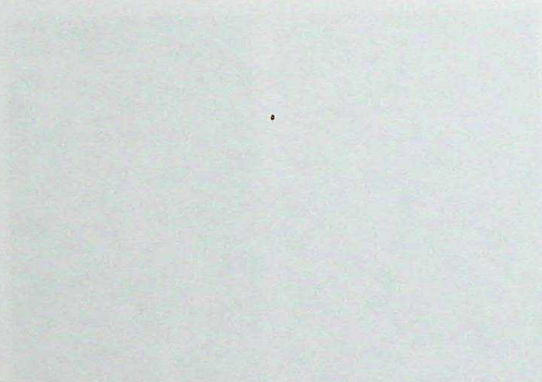
A pannotype is a wet collodion photograph made on a black waxed textile support. This was made in the same way as an ambrotype. The collodion support is then removed from the glass and transferred to a waxed textile support. These are usually rare in collections but need immense care and safekeeping. They must be framed and kept sealed away and should not be exposed to light regularly.

13.2 NON-SILVER PROCESSES

13.2a PLATINOTYPES (1873-1930)

Platinum prints, also called palladium prints are photographs made on plain, uncoated paper in which the image is constituted of platinum particles dispersed through the upper layers of the paper. The light sensitive material in the platinum print is ferric oxalate which on exposure to light is reduced to ferrous oxalate, which in turn in the presence of a developer converts the platinum compounds (usually potassium tetrachloroplatinates) into metallic platinum forming the final image.

The noble character of platinum resists oxidative-reductive deterioration of the prints. The prints are very stable and show little or no fading or yellowing. Even though it has remarkable image stability, it has more permanence problems with its paper support than other binder-less print materials do. The sensitizing solutions for the platinotype include iron compounds, which can contribute to the deterioration of the paper support if not completely removed during processing. An acid rinse to help remove these iron compounds was the final step in processing, but could itself weaken the paper support.



Platinum is an excellent catalyst for many chemical reactions. The catalytic activity of the metallic platinum image can contribute to discolouration of the print to a brown or yellow stain and embrittlement of the support. When seen in contact with the platinum image, paper or board supports may develop a "transfer image". This discolouration is caused when the breakdown reaction of cellulose chains in paper is catalyzed by platinum. Environmental factors which influence the degradation of paper, like temperature, moisture and air pollution, also influence the rate of catalytic reaction. The absence of binder and baryta layer exposes the cellulose of the support to more photochemical damage during display. And all the damages that can occur to any paper artifact like tears, areas of weakness, creases and folds and presence of surface dust, and dirt can also be noticed in uncared-for prints.

13.2b CYANOTYPES (1842-mid 20th century; present revival in art photography)

A cyanotype is a photographic print on a piece of plain uncoated paper on which the image is composed of a blue pigment. The paper is sensitized with ferric salts. On exposure to light the image looks brown in colour and upon subsequent washing and drying converts itself into Prussian blue pigment.

Cyanotypes do not have a binder layer and thus have no binder-related deterioration problems. In general, cyanotypes have deteriorated much less than the various silver print materials used during the 19th century. The principal forms of deterioration in cyanotypes are local brown staining, overall discolouration, foxing and embrittlement of the paper support, and fading of the blue image; and like any paper object, they may discolour from contact with poor quality

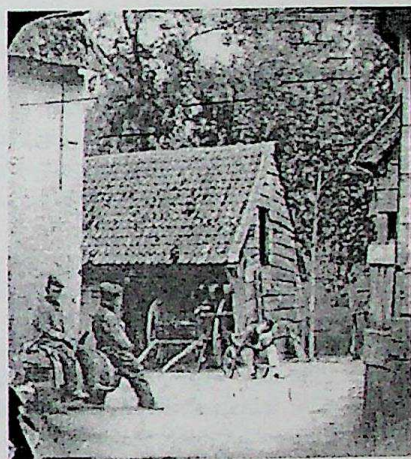


Figure 18. A cyanotype, photographer unknown

mount boards or adhesives. The paper supports of such prints have fewer stability problems than those of platinotypes, even though both processes utilize iron compounds, which are associated with several forms of paper deterioration. The blue images of cyanotypes are usually in good condition, though some prints have faded. While they are known to fade to a colourless form when exposed to long periods of light and to revive partially when stored in the dark, in general, the behaviour of the cyanotype images is not very well understood. Faded examples may have evidence of light damage (for example, a dark border where the image was protected from light by a mount) or may be faded overall. The image will fade under alkaline conditions to a very pale brown hue and lose almost all detail and density. The absence of any binder makes both the image and the support susceptible to photochemical damage. They are also easily torn because they lack the mechanical strength provided by a binder.

13.3 CARBON PRINTS (1855-1930) AND GUM-BICHROMATE PRINTS (1894-1930)

Carbon print belongs to the category of pigment photographic processes. These processes elegantly answered the problem of fading and impermanence involved in silver based processes. Conceptualized on the fact that gelatin treated with dichromate salt hardened and became insoluble in water when exposed to light. The discovery of Carbon prints exploited this property by mixing di-chromated gelatin mixed with carbon black pigment. When a coated paper of this compound is exposed to light through a negative, they become hardened and insoluble to water. When the paper is then washed in a water-bath the non hardened areas are washed away revealing the image. Sometimes, carbon black can be further added to other coloured pigments to get a chocolate brown tint in the Carbon print. A carbon print may employ a lamp black, ivory black or even a vine black, they can be tinted with Sienna, Prussian Blue, umber etc. Although the image layer is stable because of the rather lightfast carbon pigment, damages to the paper support or excessive dryness can cause the gelatin to crack and exert pressure on the support. Often a

ghost image may be seen on the back of print which should ideally have a rigid backing to protect it from damage. The most common problem is that of cracking of the gelatin in the darkest areas of the print, where the binder layer is thickest. The cracks are large and very apparent upon visual inspection. Another binder-related problem with both these prints is a strong tendency to curl when not mounted to a rigid secondary support. Even though the carbon-types have hardened gelatin, increased acidity in the support materials will make it soluble by hydrolysis. Once this happens,

When a gum Arabic colloid is treated with alkaline dichromate salt, it may result in similar properties as the carbon print. A Gum Bichromate print behave in the same way as the Carbon Print. In gum bichromate prints, the gum Arabic is seldom deposited thickly enough to manifest cracking.

13.4 WOODBURYTYPES/PHOTOGLYPTY (1864-1900) AND COLLOTYPE (1868-1940)

A Woodburytype is a result of a photomechanical process as it does not exploit the property of light to bring any changes, instead behaves like a graphic printing process. The final image layer is often described as a halftone image where the final image is a set of dots of carbon pigment suspended in a layer of gelatin. The positive is obtained from a mold. The mold is usually a dichromated gelatin positive without any pigment. This mold is pressed against a lead plate which gets impressed in areas where there is thicker gelatin than not. The relief lead plate is then filled with hot pigmented gelatin. Any paper is then pressed against this lead mold to obtain the final positive image. Woodburytypes were extensively used for illustrations in books.

The gelatin in Woodburytypes is not hardened and is extremely sensitive to moisture. In conditions of high humidity, the medium softens and become sticky making the image prone to mechanical damages. This condition also encourages the microbial activity. The other problems that may be associated with these prints are common to any paper artefact with the usual physical damages and photochemical deterioration that effects embrittlement and discolouration of the support. Environmental influences can cause deterioration in the paper support and adverse effect can weaken paper sufficiently.



Figure 19. Left: A woodburytype, photographer unknown; right: A carbon print, a Gum bichromate print, seen under magnification

In case of a collotype which almost replaced the woodburytype, a glass plate is coated with gelatin followed by a layer of dichromated gelatin. This glass is then pressed against a negative to obtain islands of dicromated gelatin which have hardened due to exposure to light and holds a latent image. The glass is then dipped in cold water to wash away the dichromate salts. The plate still holds the layers of hardened

gelatin and a layer of non-dichromated gelatin, which is water absorbent. The plate is then dipped in a mixture of water and glycerin to coat the unhardened gelatin as opposed to the hardened one. When now coated with greasy ink, the hardened areas readily absorb the ink and the un-hardened areas remain repulsive to them (similar to the lithographic process). A paper can now readily take an image from this plate by application of medium pressure. Collotypes are stable images and often are victims to only mechanical damage to the paper supports used.

13.5 NEGATIVES

Negatives usually found in archives are of three types- negatives on glass, on paper and on plastic. Paper negatives were first made by Henry Fox Talbot by coating good quality paper by silver nitrate followed by Potassium Iodide to yield a light sensitive Silver halide coating, much the same way as the first salt prints were made from glass negatives. Later this process was modified by using a waxed paper which was more transparent as compared to a normal one. Negatives such as these were fixed in a thio-sulphate solution. Main kinds of damages include mechanical damage to paper, darkening of wax and deposits of dust and abrasions. These negatives must be stored in protective envelopes and should be kept away from dusty and hot environs.

Glass negatives included albumen negatives (1847-1860), Collodion negatives, with the binder as cellulose nitrate (1851-1885) and Gelatin silver negatives (1878-1940). Their respective positives have been described in earlier sections. Negatives were produced in the same manner. Negatives on glass were able to provide sharper positives than on paper. Often these were varnished to protect their surfaces. While glass negatives with albumen and Collodion have survived better, glass negatives with gelatin have deteriorated highly, mostly due to oxidative damage to silver leading to yellowing. Mechanical damage to the image layer- abrasions and peeling away of the emulsion are also common. Glass negatives demand meticulous storage and good environmental monitoring.

Negatives on plastic films mainly include gelatin silver negatives (1889 to present) on cellulose nitrate, cellulose acetate or polyester. These negatives are normally available in camera specific sizes. The deterioration of the plastic support is the most common problem in the preservation of these negatives. In the presence of heat and humidity, the silver may be oxidized and lead to yellowing of the negative. Off gassing of nitrous and nitric acids is common from cellulose nitrate bases. These negatives may stick to their storage envelopes. Cellulose nitrate films are extremely flammable. Later developments of cellulose triacetate films reduced the possibility of their flammability. The vinegar syndrome, off-gassing of acetic acid is common to cellulose acetate films, quite commonly noticed in Indian archives.

When stacked loose on top of one another, their accumulated weight tended to fracture many plates at the bottom of the pile. They were affected by all the environmental agencies of deterioration that not only caused tarnishing of the image; it also caused separation of the emulsion from the base. Despite the disadvantages mentioned, glass has better keeping properties than some of the materials that were used later, like the nitrate base films. It is reasonably inert, dimensionally stable, and does not pose a fire hazard.



Figure 20. A Negative on Cellulose Nitrate in an advance state of deterioration

Glass support with high soda content gets deteriorates in high RH conditions leading to 'weeping glass'. Sodium silicate in the glass gets dissolved in atmospheric moisture and form droplets on the surface. This causes the emulsion layers to separate in the negatives and in case of dry plates, softening and disintegration of gelatin.

14. CONCLUSION

Photographs inspire and augment a plethora of studies and invocations. While they are key resources for information as visual documents, only after a few decades of their invention, photographs were considered no less than art objects. With a myriad of applications and interpretations, photography and imaging have become indispensable technologies in the modern times penetrating almost all fields of art, design, literature, mass media and scientific studies. Initiating and developing the idea of photograph conservation is therefore considered as an important part of any wholesome heritage conservation plan in a country.

Since, photographic media, even the modern procession techniques, are a delicate system of equilibriums, they require specific and consistent conservation management. The average image layer thickness in any photographic print is only of the order of a few microns, accelerating the possibility of its quick and terminal damage. Moreover, remedial conservation options for photographs are few as compared to other sturdy materials like paintings and sculptures. All these factors essentially redirect any conservation campaign towards the philosophy preventive conservation. While international institutions like the Getty Conservation Institute and the Image Permanence Institute in Rochester are dedicating research projects towards developing Conservation management plans for photographic collections, there is dire need to initiate such projects in Asia as well.

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**Conservation of art heritage: Past, Present and Future, with reference to
Conservation of wall paintings in India.**

by S. Subbaraman.

A) Beginnings

While the conservation of our ancient monuments - meaning their structural repairs - had been one of the functions of the Archaeological Survey of India (ASI) right from its inception in 1861, conservation as understood in the present context may be said to have commenced with the establishment of their Chemistry Branch in 1917. Even the Chemistry Branch, at the initial stages, were engaged mostly in the analysis and preservative treatment of excavated objects and it was much later that they started undertaking the conservation of monuments and our art heritage, in the form of mural paintings, in the monuments. Conservation of art objects and antiquities commenced with the Central Asian Antiquities Museum under ASI and later extended by the National Museum Laboratory, New Delhi, and other museums and still later by ICCI, INTACH, Lucknow, with branches all over the country.

1) Restoration of Ajanta paintings.

Perhaps the very first mural painting conservation work in this country was undertaken by the Government of the then Nizam of Hyderabad, who invited two Italian restorers, L. Cecconi and Count Orsini to carry out the cleaning and restoration of the famous Ajanta paintings. These restorers worked at Ajanta from December 1920 to April 1921. It is significant to note that the Archaeological Survey of India deputed Mr Sana ulla, the Archaeological Chemist to be present at Ajanta throughout the period and assist the Italian restorers in their work. The Italians also worked for a second spell of four months in 1921-22.

Their first task was to fix back all loose portions of the paintings that had got partly detached from the wall. This they did with remarkable effectiveness (by using lime-casein as adhesive) as evidenced by the fact that no further loss of painting has occurred since then. The second challenge was the cleaning of the paintings, which proved more intractable. After the discovery of these remarkable paintings, the Art historians who wanted to study them as well as the Artists who wanted to make copies of them, such as Major Gill in the 1840s and Lady Herringham and John Griffith later, used to apply a coat of varnish on the paint surface in an attempt to make it clearer. These coatings (some times of even inferior varnish like copal), combined with the deposits of dust, dirt, bird and bat droppings etc that were already there, had rendered the paint layer discoloured and hazy. Even against such odds, these experts were largely successful in removing the accretions from the paint surface and bringing back the colours almost to their original brightness, except in a few places in Caves 16 and 17, where the paint itself had been affected and further attempts at cleaning might have resulted in its loss. Details regarding the solvents used for the cleaning are not available.

After completion of the consolidation and cleaning, the need was felt for the application of a protective coating on the paint surface. A solution of shellac in spirit was selected for this purpose. While this coating served very well the immediate purpose of

fixing as well as brightening the colours and also the long-range purpose of affording protection from the atmosphere, it later turned yellow and even brown due to atmospheric oxidation, thus distorting the appearance of the paintings and even rendering them hazy in some places.

Removal of this discoloured varnish (without of course affecting the colours in the least) became the main challenge for the conservators of ASI, who followed. This work was first taken up in the mid-fifties.

2) Scientific examination of painting techniques.

After his return from Ajanta in April 1921, Sana ulla analysed the white ground of those paintings and found it to be a mixture of Kaolin and Gypsum.

Later, in the thirties, Dr. Paramasivan, Chemist at Government Museum, Madras, undertook a detailed scientific examination of the technique of the Ajanta paintings. He followed it up with similar studies of mural paintings from other important sites such as Ellora, the Pallava period paintings in Kailasanatha temple, Kancheepuram, the Chola and Nayaka period paintings in the Brihadeeshwara temple, Thanjavur, and the Vijayanagara paintings at Lepakshi and some others.

At Ajanta, the ground is ferruginous earth, reinforced with vegetable fibre, laid on the volcanic basalt rock, known as Deccan trap. Over this is a thin layer of fine clay over which is a coat of lime on which the painting is done after first making the outline drawings in red colour. The pigments used are very few in number and are red ochre, yellow ochre, lamp black, gypsum, terreverte (green) and lapis lazuli (blue). The binding medium used is a type of glue, the technique thus being tempera.

Dr. Paramasivan found most the paintings he studied to be either tempera or secco. Only the Chola paintings of Thanjavur he found some evidence to believe that they could be true fresco but this could not be established conclusively.

It is interesting to note that except for the Ala gilla process, which resembles the true fresco technique, that is in practice in Rajasthan and some other parts of northern India, the true fresco technique did not really take root in this country and most of the paintings, particularly of southern India are in either tempera or secco.

3) Other early works

a) Sittannavasal

The conservation of the 9th century Pandyan period paintings at Sittannavasal, near Pudukkottai, by Dr Paramasivan is among the early efforts to conserve our mural heritage.

b) Thanjavur

The Chola period paintings (11th century) in the Brihadeeshwara temple, Thanjavur, that lay hidden behind a layer of the Nayaka period paintings (17th century)

were accidentally discovered by Prof. Govinda swamy of the Annamalai University in 1935.

After this temple was taken over by ASI in 1946, the question of exposing the hidden Chola paintings came up and with the technology available at that time, it was thought possible to accomplish this only by chipping off the over-lying Nayaka layer and most of the Chola paintings were exposed by this method.

About three decades later, when further work of this nature had to be taken up in other areas, it was decided that the Nayaka paintings, having their own historical importance, could not be sacrificed and special techniques were devised (by the present author) to carefully detach the same in panels of suitable size , simultaneously exposing the Chola layer. The detached Nayaka paintings were mounted on fiberglass support and displayed in a gallery within the temple premises, while the exposed Chola paintings were preserved *in situ*.

c) Ajanta

The Chemistry Branch of ASI first took up conservation work on Ajanta paintings in mid-fifties.

The immediate purpose was to remove the discoloured coating from the paint surface to the extent possible and render it clear for a UNESCO- sponsored colour photography project. David de la Harport, the photographer, was an expert in his field.

The cleaning work continued even after the photography project was completed. As explained above, the cleaning process involved the removal of the badly discoloured shellac coating as well as the underlying varnish coatings, applied by earlier artists, which the Italian restorers had not been able to remove completely. The process was complicated further by the presence of bat droppings at the upper levels of the walls.

Various solvents like Ethanol, Isopropyl Alcohol, Acetone, Diacetone Alcohol, Ethyl Acetate, Amyl Acetate, Cellosolve, Triethyl Amine and judicious mixtures of these, with Turpentine as restrainer, were used in the cleaning. Square pieces of filter paper soaked in the solvent mixture were placed on the paint layer and covered by tin foil to prevent evaporation and allow the solvent time to react with the varnish. After twenty minutes or so, the ensemble was taken out and the partially dissolved varnish removed with the help of cotton swabs dipped in solvent.

The eminent experts of the Ajanta Advisory committee, who used to meet in the caves periodically, were closely monitoring the work.

The present author had the honour of taking part in this early endeavour at Ajanta.

Conservation treatment is of course a continuous process and is undertaken by ASI on that basis.

B) Present status

Following the early developments outlined above, the work of conserving and restoring our mural painting heritage has made steady progress in these five or six decades and besides the ASI, other organizations like NRLC, Lucknow, and its Mysore branch, the RCL, and possibly some state departments of Archaeology have been involved with this work but special mention must be made of ICCI, INTACH, Lucknow, who have

undertaken many important projects with great success, under the leadership of Dr. O.P. Agrawal.

While mural paintings are found mostly in old palaces in states like Rajasthan and Madhyapradesh, in the southern states, they are mostly in temples, Tamilnadu and Kerala being particularly rich in this respect. The one exception is the Ramalingavilasam Palace of Ramanathapuram in Tamilnadu. It has the largest area (about 28,000 sq ft) of mural paintings in this region and they depict mythological themes as well as actual historical events.

1) State of preservation

Neglect and lack of proper care have led to many of these mural paintings to be in a bad state of preservation. The one major cause for their deterioration is seepage of rain water from the roofs or through the walls. Apart from physical damage like loss of colours or portions of the painted plaster itself, moisture also favours the growth of micro-organisms like fungi, mosses and algae.

Bird or bat droppings are found in the upper portions of the paintings in some places. Living temples have typical problems like smoke from oil lamps and possibility of damage through the influx of large numbers of visitors.

Vandalism has been a major cause in the past but consciousness is better among visitors to monuments these days. Sheer insensitivity among even the administrators has been witnessed. For instance, in the name of temple renovation, old mural paintings in some temples in Tamilnadu have been white-washed.

Wrong methods of restoration are another form of vandalism. In a sad instance, even the Department of Archaeology of Tamilnadu, who ought to have known better, have had the 300 year-old paintings in the Jain temple at Kancheepuram repainted completely, ruining their authenticity.

2) Conservation and Restoration techniques.

With the experience gained in the past six decades or so, conservation techniques have been more or less standardized.

In consolidation and repair work, it is always a sound idea to use materials similar to the original materials of the paintings, which would ensure better cohesion. In fixing back loose or bulging portions of the paintings, lime paste mixed with a little casein is used and lime plaster for filleting the loose edges.

In tempera paintings done with a water-soluble binding medium like gum or glue, aqueous solutions cannot be used for the cleaning. A range of organic solvents have been used with success. Ethanol or Isopropyl alcohol is generally useful for the removal of dust and dirt. Oily matter can be removed with Petroleum spirit or Carbon tetrachloride. For the removal of sooty deposits, Triethanolamine has been useful. Fungal or moss growth can be removed with alcoholic Ammonia. Lime-wash can be removed only by

careful mechanical means. Bat and bird droppings, containing insoluble salts, also can be removed mechanically only.

According to strict conservation principles, re-creating of the lost portions of an old painting is to be altogether avoided, because this would compromise the integrity of the original. But perceptions vary and under certain circumstances, for instance at the insistence of temple authorities etc, who would like a visually satisfying effect, minimum re-touching such as completing lost areas of identical design patterns etc, may have to be done.

Application of a preservative coating also has been a subject of debate. There is a school of thought that holds that mural paintings need to preserve their naturally matt appearance and any coating may act like a varnish and impart gloss to the surface. But application of a thin preservative coating has its own distinct advantages. When an 1% solution of PVA or Paraloid B72 is applied, there is no gloss as such but the colours are distinctly enhanced. What is even more important, portions of the paint surface that might have become friable due to ageing, get re-fixed. A third advantage is that future depositions of dust, dirt etc. will be on the surface of the preservative film and not directly on the paint surface, affording considerable protection to the latter, and any future cleaning will involve just the removal of the preservative coating.

C) Suggestions for the future.

1) Spreading of Awareness

It is a sad fact that, even among the custodians of this important component of our cultural heritage, there is not sufficient appreciation of their importance and the need to preserve them properly. For instance, most of the mural paintings in southern India are in temples and the Hindu Religious Endowment department, who control the temples, take very little notice of them. This neglect is the main reason for their deterioration and gradual loss. Instances of the mural paintings having been white-washed during so-called temple renovations and the glaring example of wrong restoration methods adopted by the Tamilnadu Department of Archaeology in the Jain temple of Kancheepuram, have already been mentioned.

The only way to remedy the situation is to conduct periodical Awareness programmes for temple officials and even staff members of Archaeology departments, through Workshops conducted at important mural painting sites. INTACH may organize these workshops.

Periodical exhibitions displaying details of conservation works undertaken at different sites, with good photographs, will help.

2) Training of conservators

Considering the tremendous amount of work still to be done for preserving our huge mural painting heritage, the number of trained conservators available to undertake this work is woefully inadequate. Organizations like ICCI could conduct training courses of sufficient duration with emphasis on practical work in the field.

3) Survey and documentation

Some surveys of mural paintings in some states have been undertaken earlier but a systematic National Survey is yet to be carried out. The Survey along with detailed photo documentation will at least provide us a knowledge of what we have today, even in the event of some of it being lost in the future due to various causes.

4) Research

Research and analysis of the materials of our mural painting heritage is essential for a better understanding of the techniques. Analyses using some of the latest analytical techniques, which have the great advantage of needing very small samples, while being highly sensitive, are yet to be undertaken. For instance, the binding medium of the Ajanta paintings was found to be a glue on the basis of some simple chemical tests in the thirties. It will be of great interest if we could find out what exactly it is by using modern techniques like Gas Chromatography/ Mass Spectrometry. There is a strong tradition in southern India that natural vegetable and flower pigments have been used in these old mural paintings but analyses have not revealed these so far. Perhaps specific tests for tracing these have not been conducted, which can be done in the future.

Research into the various modes of deterioration of the mural paintings as well as into newer and better materials to be used in conservation for achieving lasting results, are also important because Conservation is a continuously evolving process and we should equip ourselves to face fresh challenges all the time.

Conservation of Art Heritage: Past, Present and Future *with reference to conservation training in India*

Prof. I.K. Bhatnagar

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Introduction

The word conservation is known for quite some time in reference to forest conservation, soil conservation, rain water conservation, petroleum products conservation etc. but in reference to art heritage conservation, the term is quite recent say about less than two centuries old.

Conservation envisages other identical looking terms like restoration, preservation and examination etc.

An interesting reference came to light in a restoration effort by a sculptor working on a hand of a sculpture which was inadvertently damaged by him in Seashore Temple at Mahabalipuram near Chennai. The restoration work was accomplished with such perfection that it was impossible to identify the restored portion.

Restoration in a damaged work of art is an operation to make it presentable for display in an art gallery. If the artefact is not restored and displayed in the damaged condition, the attention of a visitor will be concentrated only on that portion which is damaged and he/she will not be able to appreciate the work of art in a holistic manner.

Today, restoration in an artefact is achieved by keeping it in a slightly lighter tone so that it can be identified by a serious visitor and a casual visitor just

pass by the art piece without attaching attention on the damaged portion which has been skilfully restored.

Indus Valley Civilisation and training camp at Taxila

Important Sites: Harappa, Mohan-jo-daro, Lothal, Dhola Vira, Rakhigarahi, Kalibangan

The common view held by European and American archaeologists at the beginning of the 20th century was that there were two centres of pre-historic culture - Europe and North East. Director-General of Archaeological Survey of India (ASI), Sir John Marshall (1876-1958) could complain in 1922 that there was no evidence for the subcontinent's early pre-history. Just two years later that had all changed.

'In truth, there was no lack of evidence for early civilizations of India. It was simply that it had never been recognised as such.' Travelling through the Punjab, Charles Masson (1800-1853) had recorded in a 'narrative of various journeys in Baluchistan, Afghanistan and the Punjab during 1826-38 that he had come across in Harappa, a ruined brick castle with very high walls and towers, built on a hill.' What remained of Harappa when Masson visited we will never know, because in 1857 the builders of East Indian Railway took the opportunity to rob the site of bricks to provide for about 100 miles of ballast on which to set the railway tracks.

Marshall's predecessor, Sir Alexander Cunningham (1814-93) noticed the site and made a few small excavations there in 1873 and recovered strange stone seals engraved with a form of ancient writing. They were despatched to the British Museum in London but no further action was taken until 1921 when the British Govt. hired an Indian Archaeologist, Daya Ram Sahni. Sahni, as he dug he discovered that this was not one large building but remains of hundreds of houses buried one below the other in seven or eight distinct phases.

At about the same time, another Indian archaeologist, R.D. Banerji had begun excavations at a site 400 miles to the south, known as Mohan-jo-Daro, the mound of the dead. Banerji while digging through later historic periods, arrived at what appeared to be large numbers of houses, some of them contained Steatite seals identical to those found at Harappa.

Mohan-jo-daro was an ordered city, built on grid pattern similar to many modern cities and probably the first ever to be planned. Along its straight streets stood rows of windowless houses, their blank walls protecting the inhabitants from the blistering summer sun. Within each house were living and dining areas and a bathroom connected to the city's sewage system, all set around a central courtyard.

Indus people were farmers and traders. Excavations at Indus Valley sites have uncovered charred seeds and the remains of bones. They grew barley, wheat, rice, dates and cotton, and raised cattle, sheep, buffalo, pigs, dogs, camels and elephants.

One of the earliest efforts of chemical cleaning of ancient monuments and excavated objects was started by Dr. Sana-ullah Khan in the laboratories of the Archaeological Survey of India at

Dehra Dun. Prior to it, the main work of conservation, ever since the establishment of Archaeological Survey of India (ASI) in 1861, was carrying out structural repairs to ancient monuments and archaeological sites, many of them were in a dilapidated state. Dr. Khan, Archaeological Chemist migrated to the newly formed state of Pakistan after India's partition.

Dr. B.B. Lal, an alumnus of Lucknow University, was appointed Archaeological Chemist and was sent to the British Museum, London for training in conservation of works of art.

Sir, Mortimer Wheeler was the last British Director General of Archaeological Survey of India during 1944-48. One of the major achievements of Sir Wheeler was to impart training to enthusiastic young men and women in excavation techniques and chemical conservation of excavated material. Most of the Indian archaeologists who attained highest position of Director-General of ASI - namely Prof. B.B. Lal, B.K. Thapar, M.N. Deshpande and others were trained at Taxila training camp conducted by Sir Wheeler. Dr. Lal was also present at the camp and assisted in imparting training in chemical cleaning of excavated artefacts.

Conservation Works in ASI and other institutions

The Chemistry Branch, as it was known then, had four Zonal Offices at Dehra Dun, Aurangabad, Bhubaneswar and Madras and two Regional Offices at Hyderabad and Dehra Dun. The officers appointed in various positions were trained by their senior officers after they were appointed. Now, there are 9 different zones. These offices at four zones were carrying out chemical cleaning of monuments, paintings inside monuments, filling and consolidation of loose painted plaster and also cleaning painted surface with solvents.

In 1964, a team consisting of Dr. H.J. Plenderleith and Dr. Paul Coreman visited India and a detailed plan was prepared to expand the working of the Conservation Laboratory of National Museum, New Delhi and it was named as Central Conservation Laboratory.

National Museum Laboratory has started giving 3-months training to participants from neighbouring countries - Bangladesh, Bhutan, Sri Lanka etc. from 1972 onwards.

In 1976, a prestigious laboratory - National Research Laboratory for Conservation of Cultural Property (NRLC) was established in Delhi which was subsequently shifted to Lucknow in 1978. Besides conducting research in modification/improvement of conservation methods, NRLC with the collaboration with UNESCO and UNDP started in 1978, 6-months training programme for participants of South-East Asian countries namely Philippines, Sri Lanka, Bhutan, Nepal, Bangladesh etc. The training programme is continuing even today but grants from UNESCO/UNDP are no more coming.

As early as 1930, the Government Museum, Madras was carrying out electrolytic reduction of huge sized Chola bronzes in specially fabricated equipment. The laboratory was also treating the artefacts of other museums in Madras State. The Government Museum was also conducting one-month training programme for museum staff and other interested individuals. Some of these trained persons started working in museums as volunteers.

Many universities - namely Aligarh Muslim University, Calcutta University, M.S. University of Baroda, Bharat Kalan Bhawan, BHU have started post-graduate Diploma in Museology which have a component of chemical conservation of museum objects. Aligarh

Muslim University, Calcutta University have two-year M.A./M.Sc. courses which they are successfully carrying out.

ASI had a School of Archaeology which is now upgraded as Institute of Archaeology and they conduct two-year Post-graduate diploma course which also have a component of chemical, architectural conservation. For training in chemical conservation, the participants spend about 2-3 weeks time at the laboratory of the Director (Science), Dehra Dun.

Indian Museum, Kolkata, State Museum, Lucknow, Mathura Museum, Mathura, State Museum, Bhubaneswar have conservation laboratories which carry out the treatment of their collections.

Indian Council of Conservation Institutes, Lucknow was established in 1985 under very eminent and renowned Director-

General, Dr. O.P. Agrawal who has vast experience in the field of conservation. ICCI is well-established in last 25 years and has a number of new centres at important places in the country. The Institute is providing job opportunities to young trained personnel and also imparting training on job. Some of the participants are being sent abroad for advance training.

In 1989, National Museum Institute of History of Art, Conservation and Museology (NMI), New Delhi was established as a Deemed University within the premises of National Museum. The main objective to house the NMI in National Museum was to use the infra-structural facilities like conservation laboratory, museum galleries, library, photo section, modelling section of the National Museum for educational purposes at post-graduate level. It is planned as an Institute of Excellence. NMI is the only institute in India which is having two-

year M.A. degree course in conservation and also Ph.D. programme. The in-take of students is from science or fine arts background at graduate level.

Delhi Government opened a Post-graduate Institute of Management, Architecture and Conservation recently which is having two-year M.A. degree course in management and conservation with specialisation in one of the subjects.

Kerala Government has also started a Post-Graduate Course in Conservation, History of Art, Museology and Architecture at Tirupunthara Hill Palace near Ernakulam.

Future status of conservation of works of art

So far we have been following the principle of minimum intervention because what type of thinking was in the minds of the artist is not known and interfering with his thought process is considered unethical. Many present day artists refuse to reconstruct missing portions of a painting or sculptures on the above considerations.

Gradually the trend is changing and many owners of art objects prefer to renovate a work of art so that it looks impressive. Many seasoned conservators do not subscribe to this view. An antique should look antique and if the owner wants to make it look new, he/she should better get a new copy made.

With the most sophisticated equipments available in the pure science and engineering disciplines in the country, there is a need to have a mutually beneficial programme of studies of ancient material and at the same time generating most authentic database. In the process, archaeologists and conservators should come forward and interact with scientists and technologists working in fifty odd CSIR laboratories, IITs and other national level institutions

and find answers to unsolved problems of conservation of works of art. Technique of fabrication of metals and their alloys, correlation of the components of metals or alloys to the sites from where ore came, glass beads, different type of stone sculptures and causes of their deterioration, testing and evolving new indigenous materials, use of specific enzymes for separating struck folios of manuscripts etc.

Time has come when the owners of antiquities and pure scientists and technologists come out of their glass-houses and have constructive approaches to find answers to unsolved mysteries. This contribution by the two group of specialists is not only an academic exercise but also a social responsibility towards their motherland.

Conservation of Cultural Heritage: Past, Present and Future, with reference to the Conservation of miniature Paintings in India

K.K.Gupta

Introduction

Various objects, which we call today as antiquities had some specific function to perform, when these were created – utilitarian or decorative, and in order to keep them functional, they used to be repaired or replaced by new ones. So it can be said that the Conservation of objects is as old as civilization itself. The main purpose of conservation at that time was to keep the objects functional for the purpose they were created and, therefore the conservation procedures were not necessarily according to today's ethics. Most of the conservation was being done by the artists or craftsmen, and there was no distinction between restoration and renovation. Since the very purpose of conservation has changed and the thrust has shifted to the originality of the creation, the conservation is bound to be more systematic. One needs to understand the material and techniques employed for the fabrication of objects and the intention of the artist before undertaking their conservation. Now the Conservator/ Restorer has become a separate identity, and the international community has set certain ethics in conservation to avoid the subjectivity of the conservator in following the strategies to achieve uniform results of conservation, as far as possible.

Conservation of Cultural Heritage
in the
State of Uttar Pradesh

Introduction

Uttar Pradesh is a state of great historical and cultural importance. It is the birthplace of many of the great empires and dynasties of India. The state is rich in its cultural heritage, which is a treasure of the nation. The conservation of this heritage is a task of great importance. The state government has taken many steps to conserve the cultural heritage of the state. It has established many museums and monuments. It has also taken many steps to protect the ancient sites and structures. The conservation of the cultural heritage of the state is a task of great importance. It is a task that requires the cooperation of the state government, the central government, and the people of the state. The conservation of the cultural heritage of the state is a task that requires the cooperation of the state government, the central government, and the people of the state. The conservation of the cultural heritage of the state is a task that requires the cooperation of the state government, the central government, and the people of the state.

History of Conservation of Miniature Paintings

Though systematic conservation of art heritage in India is about 60 years old, conservation as such was in practice from the time of the creation of these works of art. This conservation was in the form of preventive conservation i.e. their protection from the deteriorating agencies or in the form of curative conservation, which was mainly restoration, or renovation in the present sense.

There was no existence of the conservators, and the conservation of miniature paintings was being undertaken by the artists. Their attitude was to do as much as possible perhaps to satisfy themselves and to make the painting as strong as possible. There was no concept of preservation or reinforcement of original paint and their aim was complete reconstruction removing all the loose and flaking paint that was likely to fall off. The reason for this perhaps was that the original paint was not valued because the paintings were not antiquity at that time and because these artists were capable of recreating these in their original form. Since the aim was to restore the paintings to the full and the original materials were used, though the treatments were subjective, the results were more or less uniform. This may still be a practice with many of the private conservation establishments mainly to satisfy their customers.

Systematic Conservation

Systematic conservation started in India with the establishment of a conservation laboratory in Government Museum, Madras in 1930, followed by one at National Museum, New Delhi in 1958. These laboratories were meant mainly to cater to the conservation requirements of the collections of their own museums. Most of the conservation methods and materials used even in those existing laboratories were the ones used in other developed countries, which were not necessarily the best under Indian circumstances.

History of Conservation of Manuscripts in India

The first systematic work on the history of the manuscript in India was done by Dr. S. K. Mitra in his book 'The Manuscript in India' published in 1912. This book was a pioneer work in the field of manuscript studies in India. It dealt with the history of the manuscript from the pre-historic times to the present. It also dealt with the various methods of preservation of manuscripts and the various institutions which have been established for the purpose of preserving the manuscript in India.

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Systematic Conservation

Systematic conservation of manuscripts in India was started in the year 1906 when the first systematic attempt was made to preserve the manuscript in India. This was done by the Government of India. The first systematic attempt was made to preserve the manuscript in India. This was done by the Government of India. The first systematic attempt was made to preserve the manuscript in India. This was done by the Government of India.

Since National Museum, New Delhi had a large collection of miniature paintings, their systematic conservation was started being undertaken by National Museum's laboratory in sixties, under the guidance Shri T.R.Gairola and Shri O.P.Agrawal, the head and deputy head of the laboratory respectively.

The methods and materials used for the conservation of antiquities and works of art were based on the ones used in other developed countries, which were not necessarily the best under Indian circumstances. Even on the international scene, there were very limited publications on conservation, and the volume 'Conservation of antiquities and works of Art' authored by H.J.Plenderleith was considered to be the manual for conservation. However, even this volume hardly contained any information on the conservation of Indian miniature paintings. So the materials and techniques for the conservation of miniature paintings were adopted from those used for the conservation of manuscripts or paintings on paper

This was the time when there was no distinction between the fixative used for protecting the paint of miniature paintings during their aqueous treatment such as cleaning, deacidification or lining these and the consolidant used for reinforcing their paint. Poly vinyl acetate and poly methyl metha acrylate, mainly used for the purposes, used to be applied all over the paintings and allowed to remain their even after the treatment. Aqueous deacidification was very common and efforts were almost always made to remove discolouration and stains by the use of bleaching agents such as hydrogen peroxide. Strip-lining and full lining were almost always given to the paintings during their conservation. Since a generous amount of water was used for these aqueous operations, a thick layer of the fixative was necessary, which was often left to provide strength, which however, made the paint glossy.

Conservation Research and Training

There was obviously a strong need for research and developing our own methods and materials, which can stand the hostile Indian environment, besides fulfilling the conservation requirements of these works of art in a better way. The establishment of NRLC at Lucknow in 1976, almost solely by the efforts of Dr. O.P. Agrawal, was an important development in the field of conservation research in India

There was also a shortage of trained conservators, as there was hardly any opportunity for learning art conservation in the country except some short-term conservation training courses being run by some museums, archives or libraries. These were also generally meant for in-service persons to further their knowledge and skill, and not for producing new conservators. An important development in this direction was the establishment of National Museum institute of History of Art, Conservation and Museology (Deemed to be University) at New Delhi in 1989, which offers two years masters degree course in Art Conservation, followed by the establishment of Delhi Institute of Heritage Management towards the end of 20th century, which offers a postgraduate degree course in Heritage Management and Conservation. Some other universities and institutes have also started certificate, diploma or post graduate courses, with art conservation as one of the subjects.

Conservation at Present

Conservation scene has now dramatically changed. Art Conservation has suddenly become important. A number of conservation projects are being undertaken both by Government and non- government organizations. Every second person in the field owns an art conservation firm or is a part of NGO undertaking conservation work. Many individuals and firms dealing in other related disciplines have also entered into conservation field.

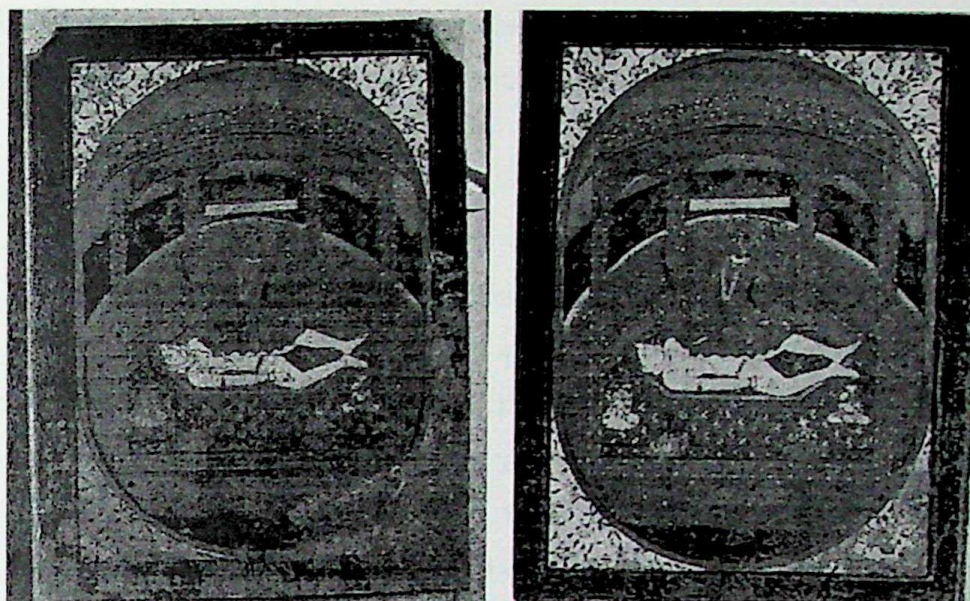
With the development of new materials, there is now a wider choice of materials for consolidation of miniature painting. Instead of hygrophobic PVA and



Before and after conservation treatment without reproducing the details

which changes the character of paintings and make them heterogeneous in their behaviour to atmospheric parameters, in case of local consolidation, hygroscopic consolidants such as methyl cellulose, deer glue, Tylose - methyl hydroxy propyl cellulose and ethyl hydroxy ethyl cellulose are being preferred. Since the paint of miniature paintings is likely to swell by exposure to water, minimum amount of water is used during their conservation and efforts are made to avoid any fixative even during their aqueous treatment. If used, fixatives are removed after their function of protecting the paint during aqueous treatment is over. Deacidification with stronger alkalies are avoided as the drastic change in pH may affect the colours of the painting. Complete removal of stains by the use of bleaches is not aimed, as these results in weakening of the constituents of the painting. Alternative treatment of local repair of the support of the painting is being preferred to lining. Retouchings of paintings are mainly restricted to the background only for reducing the distraction of the viewer from the damages, without tempering with their vital details.

Despite the availability of larger range of conservation materials and the awareness of ethics of conservation, it is extremely difficult to generalize the philosophy of conservation being adopted now. Many individuals and institutions of repute, including government institutions are following the ethics of



Before and after conservation treatment

conservation, such as protecting the original components of the paintings and their signs of age as far as possible, introducing as little as possible into the paintings and keeping the additions distinguishable from the original. But there are many others, which are ignoring these because of the demand of the owner, for their own convenience or perhaps justifying their restoration charges.

So, ironically, even after the availability of guidelines and ethics of conservation meant for avoiding the subjectivity in conservation to have uniformity in it, the results seem to have more variance.

Future of Conservation

Future is untold. One can only visualize the events that may unfold in future. To me it seems that on one side the time is fast approaching towards the philosophy of restricting the conservation to only health treatment i.e. consolidation of paint and reinforcement of support mainly by repair, without attempting any cosmetic treatment such as restoration and retouching, keeping the damages visible as a part of history of the existence of paintings. On the other hand, there may not be any line of distinction between health and cosmetic

conservation treatment because of various reasons including the requirements of the owners of such art heritage collections.

Conclusion

Though a lot of good work has been and is being done in conserving the collections of Indian Miniature Paintings in the country, every thing is not fine. In order to speed up the conservation work, or to produce dramatic results, or to satisfy the owner, conservation ethics are sometimes compromised, particularly by private organizations and individuals. It is not only the question of ethics, the use of unsuitable material or short-cuts in conservation may lead to further degradation of these paintings.

It is hoped that instead of succumbing to the pressure of the demands of owners of works of art, conservators should try to educate them about the ethics and thus help passing on the cultural heritage to the posterity in its original form as far as possible.

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ARTICLE FOR NATIONAL SEMINAR ON CONSERVATION OF ART
HERITAGE : PAST PRESENT AND FUTURE

**TOPIC: CONSERVATION OF ART HERITAGE: PAST PRESENT AND
FUTURE WITH REFERENCE TO CONSERVATION OF PALM LEAF
MANUSCRIPTS**

MALLIKA MITRA
CHIEF
CONSERVATOR
&COORDINATOR I/C
INTACH OACC
BHUBANESWAR

ABSTRACT: The art heritage of Orissa mainly comprises of exquisite work on palm leaf either in the form of text, line drawings, sketches or painted illustrations. The Palmyra palm leaf variety abundantly found in the eastern coastal belt was mainly used as support of writing before paper was discovered. The oldest palm leaf manuscript of Orissa ABHINABA GEETAGOVINDA a non-illustrated palm leaf manuscript, which is housed in the Orissa State Museum dates back to about 15th century AD. The style of seasoning, text-writing which is incising, inking and then preserving it till date itself narrates about the heritage associated with it. INTACH Indian conservation Institute Orissa Art Conservation Centre, Bhubaneswar since 1995 has been fortunate enough to touch and feel these heritage objects by means of performing conservation interventions on the folios which is a dream for the common visitor to touch poet Jaydev's creation. This paper discusses all such experiences of the Orissa Art Conservation Centre Bhubaneswar associated with conservation of palm leaf manuscripts and all such activities associated with palm leaf manuscripts.

CONSERVATION OF PALM LEAF MANUSCRIPTS – A BEGINNING IN
PRESERVATION OF PALM LEAF HERITAGE IN ORISSA

The Orissa Art Conservation Centre was established by INTACH ICCI in 1995 inside the Orissa State Museum with support from the Govt of Orissa with the concept of conservation of all palm leaf manuscripts of the Orissa State Museum. It was a very new concept which was very happily and eagerly accepted by the State Govt which was the first positive step taken for preservation of the art heritage component of the state. The Orissa Art Conservation Centre as a result of which conserved more than 15000 bundles of palm leaf manuscripts introducing very new techniques in conservation of palm leaf manuscripts using very innovative ideas and compatible materials following the reversibility ethics of conservation. There came the techniques of INTEGRATION OF BROKEN FOLIOS AND FILLING OF INSECT HOLES in addition to the general technique of brushing, solvent cleaning, oiling, inking and inducing flexibility to the leaves etc.

It was a terrible experience touching *geetagobinda, ushivilasha, ushaharana, chausathi ratibandha--- etc* some of the extraordinary and exotic creations in the history of Orissan and Indian art and heritage. The conservators of Orissa Art Conservation Center did it with full dedication and commitment as if they are committed to Lord Jagannath. Because they were taught in conservation you need sense of belongingness, holiness, commitment and dedication. The result was mesmerising. All the 410 illustrated Geet Givinda manuscripts are now conserved, displayed and some have been accorded **the National Treasure status** by Govt of India. The conservation work can be seen on them, the hard work and effort of the conservators in preserving the National Treasure is worth.

CONSERVATION LEADING TO SEARCH FOR MORE COLLECTION

It was felt that is it only enough that we conserve the priced collection of palm leaf manuscript housed inside the Orissa State Museum or we reach out to villages where each family possess the ancestral property (one large box full of palm leaf manuscripts)housed inside the *puja room* near the *family deity of each family*)
Another experience for the Orissa Art Conservation Centre when it went out to survey the collection of palm leaf manuscripts with the private owners . It was unbelievable that people possess even priceless manuscripts than those housed inside the State Museum. A systematic survey on palm leaf manuscripts was held by the experienced surveyors of the centre for 5 years and at the end came up with large statistics of palm leaf manuscripts housed with the private owners .About 5 lakh bundles!!

SEARCH LED TO TRAINING AT RURAL LEVELS

Conservation of palm leaf manuscripts : This concept was circulated among the owners of the collection to build up a sense of confidence to take care of the palm leaf manuscripts. It became easier because there is a tremendous sense of belongingness in the local people with the palm leaf manuscript collection. Villagers, elderly men ,women, youth , students every one participated in the rural workshops held by the centre on conservation of palm leaf manuscripts in which the expert of the centre would teach the basics of conservation and upkeep of a palm leaf manuscript collection. Several collections got themselves treated and conserved through this exercise. There was no conservation laboratory, fumigation chamber, fume hood, other equipments but conservation was done in schools, clubs, temples, monasteries, maths, village libraries with the minimum required resources that were transported by the resource persons of the centre even sometimes to the places that are difficult to reach. Statistics- more than 65 rural workshops held in Orissa on conservation of Palm leaf manuscripts by Orissa Art Conservation Centre. Indeed a great approach to preserve the heritage of the state.

CENTRE OF EXCELLENCE : IN TRAINING AND WORKSHOPS ON CONSERVATION OF PALM LEAF MANUSCRIPTS: INTERNATIONAL LEVEL

The Orissa Art Conservation Centre maintained its excellence in conservation of palm leaf manuscripts by not only conserving the heritage of our country but also trained experts, custodians and professionals of other countries to preserve their heritage of palm leaf manuscripts also. The centre has resources to train foreigners in conservation of palm leaf manuscripts and is being doing such work since 1998 till date till 2010. Knowledge increases in sharing. Techniques of Conservation of palm leaf manuscripts exclusively followed in the Orissa Art Conservation centre are now the guidelines for National library and National Museum of Srilanka, Thailand, Philippines, Malaysia, Indonesia, Bangladesh, etc.

CENTRE ACCORDED STATUS OF A MANUSCRIPT CONSERVATION CENTRE – NATIONAL MISSION FOR MANUSCRIPTS, DEPT OF CULTURE, GOVT OF INDIA.

One more feather on the cap ! the centre now works for all the palm leaf manuscript collection of the state. Be it an institutional collection or a private or govt collection or a religious collection. Any custodian of palm leaf manuscript can come with any query related to its conservation and preservation. Conservation work, maintenance and upkeep of storage, workshops and awareness campaigns are some of the major activities under the conservation assignment.

CONCLUSION

The centre has been able to grow with the dedication it has shown in the conservation of palm leaf manuscript of the State by which the past present and future of the art heritage has been completely taken care of. Any one talks about Conservation of Palm leaf manuscripts in Orissa does mention about the contribution of INTACH ICI Orissa art Conservation Centre in reviving the feeling of belongingness and commitment by maintaining the emotional attachment of the owner with its inherited asset, making all efforts to preserve it not only by using synthetic conservation materials but also by using indigenous and traditional herbs that has proved to be very very effective and satisfactory. Thus not only the heritage of palm leaf is preserved but also the tradition of using traditional herbs on the leaf has also been preserved.

Conservation of palm leaf manuscripts is continued in both curative as well preventive ways by the Orissa Art Conservation Centre although the curative method is manual, time-consuming. But the result explains everything and no one looks for any other faster alternative because ultimately the time spent on each folio has value as well as sentiment which is just like making another art object!

**CONSERVATION OF TWO
OIL- PAINTINGS FROM VIDHAN SABHA,
PATNA**

**BY: VASUDHA PANDE
SR. CONSERVATOR
ICI, LUCKNOW**

INTRODUCTION

Two oil paintings made by renowned artists Radha Mohanji were received at ICI, Lucknow from Vidhan Sabha, Patna for conservation, one containing a portrait of Pandit Nehru, measuring 200x123 cms and the other of Dr. Rajendra Prasad measuring 215x139 cm. These paintings were on display near the entrance walls of the Chief Minister's office. Both the paintings were brought to Lucknow by road, after providing them a properly padded water proof packing for a safe journey.

After their arrival, they were taken to the laboratory for a detailed documentation and examination. Documentation of the paintings was done in written, graphic as well as photographic form. Various types of radiations and lights were used, eg. Visible light, ultraviolet rays, transmitted light to assess the different kinds of losses and damages that had taken place in the painting. pH and solubility levels of the colours in the paint layer were tested, so that one could decide suitable solvents for conservation purposes and also an appropriate line of treatment.

The problems encountered and the treatment given has been described in form of two case studies.

1. Oil Painting of Pandit Nehru: This painting on canvas contained a life size portrait of Pandit Nehru. The colours mainly used were yellow, green, brown and black.

Conservation Status:

- The frame of the painting had been removed before bringing it to Lucknow.
- Cobwebs, dirt and dust, insect excreta, eggs covered the painting from back and front as well.

INTRODUCTION

The purpose of this book is to provide a comprehensive survey of the history and development of the Indian subcontinent from the earliest times to the present day. It is intended to be a useful reference work for students and scholars alike, and to provide a basis for further research and discussion. The book is divided into two main parts, the first of which deals with the pre-historic and ancient periods, and the second with the medieval and modern periods. The first part is further divided into three sections, the first of which deals with the pre-historic period, the second with the ancient period, and the third with the medieval period. The second part is divided into two sections, the first of which deals with the medieval period, and the second with the modern period.

After this general introduction, the book proceeds to deal with the pre-historic period, which is the earliest period of human history. It is a period of great interest and importance, and one which has attracted the attention of many scholars. The pre-historic period is divided into three main periods, the first of which is the Stone Age, the second is the Bronze Age, and the third is the Iron Age. The Stone Age is the earliest period, and is characterized by the use of stone tools. The Bronze Age is the middle period, and is characterized by the use of bronze tools. The Iron Age is the latest period, and is characterized by the use of iron tools. The pre-historic period is a period of great development and progress, and one which has laid the foundation for the civilization of the present day.

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- The flaking problem in the painting's paint layer was present all over especially in the face area.
- Flaking was leading to loss of paint layer.
- Abrasion, darkening and discolouration were seen all over the painting.
- A tear was seen in the centre on the lower side.
- Previous restoration work had been done in a tear on the right side by stitching it from the back using a thick thread in untidy manner.
- A small piece of paper having some drawings was stuck from the back in this tear and filling had been given in the front.
- Signs of previous restoration were also visible, in form of over painting upon the original paint layer.
- Shining patches were seen in several areas, a big patch was seen on the left side of the face.

Conservation treatment

- The painting was first removed from the stretcher.
- Cleaning of dust, dirt and cobwebs was done with the help of a dry brush and vacuum cleaner.
- Solvents and chemicals were used to remove stains and spots.
- Cleaning of over paint was done using different chemicals.
- The main problem of the painting i.e. flaking was arrested by applying coatings of Beva in toluene (1:10) from the back as well as front, with the aid of soft brush. Consolidation done in this way stopped the flaking completely.
- Lining was done using the strip lining method using pedicryl as an adhesive.
- Filling was done in the areas having loss of paint layer and ground.
- This was followed by retoning in a neutral shade.
- The painting was restretched on a new stretcher with loose lining from the back.

- A protective coating of Paraloid B-72 in toluene was applied from the front.

2. Oil Painting of Dr. Rajendra Prasad: The painting on a canvas contained a life size portrait of Dr. Rajendra Prasad. Colours like yellow, green, brown and black had been used prominently and they gave a dull appearance.

Conservation Status:

- The frame had been removed before bringing the painting from Patna to Lucknow.
- Discolouration and darkening present all over.
- Stains and spots were present at several places.
- The painting was covered heavily with dust and dirt. The back of the painting was covered with cobwebs, insect excreta and eggs.
- Several areas in the painting carried dark shining patches, especially in the centre and left side.
- Water stain had been formed at the bottom of the painting.
- Abrasion was present at lower side.
- Flaking and loss of paint layer was seen at the edges.

Conservation treatment

- The painting was removed from the original stretcher.
- Cleaning of the back and front was done using a vacuum cleaner and dry brush.
- Solvent and chemicals were used for removal of stains, spots and shining patches.
- Removal of water stain was done using water and spirit.
- Consolidation was done where required.
- Strip lining of the painting was done using pecticryl as an adhesive and canvas cloth as the lining base cloth.
- The lined painting was stretched on a new stretcher which already had been provided a cloth to act as loose lining.

- Filling of the areas having loss of paint layer was done.
- Retoning was done on the filled areas and cracks.
- A protective coating of Paraloid B-72 in toluene was applied all over.

by Mrs. Madhura Shelke & Mr. Anant Shelke

1.1 Introduction:

John Forbes Watson (1827-1892), Reporter for the Products of India at the India Office, London, began his career as a physician in the Bombay Medical Service. He became involved in the Indian sections of the international exhibitions from 1862 through his interest in the botany of India.

His idea for '*portable industrial museums*', led to the publication of *The Collections of the Textile Manufactures of India* in 1866, eighteen volumes of mounted and classified samples of Indian textiles containing seven hundred examples in all. The samples were mostly taken from Indian textiles shown at the 1855 Paris International Exhibition.

The textile samples were intended to inspire students and textile manufacturers in Britain and also to alert them to the opportunities of the vast Indian market. Forbes Watson often included notes on cost, who might wear the complete piece and how.

One cannot but admire the elaborate and comprehensive manner in which this documentation was undertaken.

1.2 Object Details:

18 volumes containing beautifully mounted more than 700 samples of Indian Textiles which include beautiful hand-woven silks, hand-printed cottons and hand-embroidered muslins, woollens designed and made throughout South Asia. Each sample indicating the character of the whole piece from which it had been cut. Alongside is an accompanying explanatory text with sizes.

1.3 Examination:

According to the procedures, the necessary step of documentation was followed. Photographic documentation before conservation with details was recorded. Condition report was entered with the existing condition of the object.

Tests were conducted on each and every sample to check in the dye sensitivity and to finalize on the solvents to be used for cleaning.

1.4 Condition:

The volumes when received were in a glass case tightly stored. Only after removing one by one we were able to check the extent of damage. Each volume was in a highly deteriorated condition.

*Deposition of dust dirt was noticed everywhere.

*The folios of samples were cut and detached from its binding. The leather spine was hardened and was falling apart.

*The highly acidic papers used as mounts for the textile sample were brittle and discoloured.

*These highly acidic mounts had also weakened the textiles with loss of flexibility.

*The paper labels on top edge and on the sides were pasted with acidic adhesive resulting in dark brownish stains, and foxing marks due to acidity.

*Few folios and its textile samples had evidences of insect infestation.

*Due to loose binding and improper handling, the textile samples suffered from wrinkles, folds, and tears.

1.5 Conservation:

After examination and diagnoses of the causes of its degradation, steps taken are as follows:

a. *Creating new mount :*

After its pagination, the acidic paper mount were used as stencils to create the similar pattern on the new acid free handmade paper which were numbered accordingly. The paper labels were removed; the pasted edges of the textiles were carefully loosened. The new mounts were then given a guarding of similar coloured cotton cloth.

b. *Deacidification:*

The paper labels were strongly attached to the mounts with hard acidic adhesive. To soften the adhesive the labels were dipped in warm water with few drops of ethanol. After its careful removal, they were deacidified with aqueous treatment. To lighten the dark stains the labels were dipped in distilled water with few drops of ammonia. The labels were then relined on to Japanese lens tissue.



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c. *Cleaning of Textiles:*
Digitized by Sarayu Foundation Trust, Delhi and eGangotri. Funding: IKS 48
Each textile was tested for its colour sensitivity. Only where the dyes used were stable and did not bleed, the textiles were kept on layers of blotters and washed with distilled water which was applied with soft nylon hair brushes to remove the engrained dust, stains and acidity. The stains were tried to minimize locally. Those textiles with sensitive dye were cleaned with customized solution of ethanol and distilled water. When slightly semidry, the textiles were flattened to remove the physical distortions.

d. *Repairs:*
The textiles with tears were darned; those fragile were stitched on the similar coloured cotton cloth to provide strength to the originally weakened.

e. *Remounting:*
The flattened textiles were then remounted similarly as before on its pre-cut mount. The lined labels were also pasted using gluten free starch paste.

f. *Rebinding:*
The folios were then sectioned and bound into a volume.

1.6 Conclusion:

Conservation of the Watsons Textile sample collection was a prestigious as well as challenging job. Each of the samples had to be individually treated. After conservation the textiles appeared clean, the original colours were enhanced. After binding the volume received its lost glory.

1.7 Acknowledgements:

Our sincere thanks to Mrs. Tasneem Mehta, Vice Chairman of Intach, Managing Trustee & Honorary Director of Dr. Bhau Daji Lad Museum and to Dr. O. P. Agrawal, Director General, ICCI for their trust and support.

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by Mrs. Madhura Shelke & Photography by Mr. Anant Shelke

1.1 Introduction:

Displayed in open air of the east garden of the museum, the marble statues of Queen Victoria and other former colonial governors were severely deteriorated with dust, dirt, bird droppings and salts in the environment. The growth of microorganisms had altered the appearance of marble and resulted in unwanted aesthetic changes to the marble surface.

1.2 Examination:

According to the procedures, the necessary step of documentation was followed. Photographic documentation before conservation with details was recorded. Condition report was entered with the existing condition of the object. Test Patches were done to finalize on the solvents to be used for cleaning.

1.3 Conservation:

After examination and diagnoses of the causes of its degradation, the next step was to take action to stop the further deterioration and to bring it back to its original beauty. Steps taken are as follows:

a. Liquid Cleaning:

After the tests general grime, dust, bird droppings were tried to be removed from the sculptures using a mixture of distilled water with up to 2% non-ionic detergent. The Cleaning was followed with slow and circular motions using nylon hair brushes. This was followed with a wash of plain water.

Solution of ethanol and distilled water with few drops of liquor ammonia was used to remove the hard dirt and stubborn stains.

b. Poultice Method:

The paper pulp poultice with distilled water was used for desalination, to draw out soluble salts. It was covered with plastic sheets to help hold the moisture for 24 hours. Still even when desirable results were not noticed, AB-57 formula was applied in CMC. This was then cleaned until all traces of the gel were removed.

c. Algaecide treatment:

The sculptures were covered with deep engrained dark, grayish black microbiological growth. After conducting tests, Algaecide (Sodium Salt of Dichlorophene) with commercial name Polycide was applied 0.05% in water by brush over the marble sculptures. This solution was kept for a period of 2 hrs and then washed with plenty of water and nylon hair brushes. The result achieved was good, and changed the appearance of the sculptures drastically.

This process was repeated again after 8 days. This removed the small left out traces of the microbiological growth.

1.4 Conclusion:

All five marble sculptures were treated in same manner. The details hidden under the thick layers of dust, dirt, bird dropping and algae growth for years were visible after conservation.

But as these are open air sculptures, they are frequently damaged with dust and bird droppings.

Hence a bi monthly maintenance schedule was structured. Simple method of washing with water and 1% of non ionic detergent is followed till date to keep the sculptures clean.

1.5 Acknowledgements:

Our sincere thanks to Mrs. Tasneem Mehta, Vice Chairman of Intach, Managing Trustee & Honorary Director of Dr. Bhau Daji Lad Museum and to Dr. O. P. Agrawal, Director General, ICCI for their trust and support.

1.6 Reference:

The Restoration & Revitalization of Dr. Bhau Daji Lad Mumbai City Museum,
By Mrs. Tasneem Mehta in 2009 (Published by the Managing Trustee for Dr. BDL Museum Trust)

1.1 Introduction:

George C. Clarke workshops at Sir. J.J. School of Art, Mumbai known as the Bombay School Pottery experimented with the new type of clay, glazes, forms and designs. The style of Ajanta Frescos influenced the painting on the pottery. This early experimentation with different art forms and mediums marked the beginning of the 'Modern' period of art practice in Mumbai.

1.2 Object Details:

Late 19th –early 20th Century Pottery

Ceramic pottery made in two parts, Pot and the Base. The neck of the pot has 4 blue glazed peacocks, mid portion has the beautiful feathers depicted. The Base has 4 peacocks in green glaze. Size: 79.5 x 43.5cm

1.3 Examination:

According to the procedures, the necessary step of documentation was followed. Photographic documentation before conservation with details was recorded. Condition report was entered with the existing condition of the object. Test Patches were done to finalize on the solvents to be used for cleaning.

1.4 Condition:

The primary causes of deterioration in the museums ceramics collection were the improper storage & display conditions with faulty prior restoration work which resulted in the chipping of some objects, loss of surface glazes and heavy accumulation of dust and dirt.

In this case the hard layers of dirt had discolored the glazes noticeably. The deterioration had set in where the glazes had developed cracks and had started to flake. There were huge losses which had exposed the underneath layer of baked ceramics.

1.5 Conservation:

After examination and diagnoses of the causes of its degradation, the next step was to take action to stop the further deterioration and to bring it back to its original beauty. Steps taken are as follows:

a. Local Consolidation:

Consolidation was done along the cracks and flaking to arrest the glazes from falling apart. In the process tests were conducted using 6% of Paraloid B72 in Toulene was used as a consolidant. It was noticed that the 6% was weak in consolidating and hence it was decided to increase the % by 2. Accordingly 8% was tested and finalized. It was noted that the glazes firmly adhered to the baked ceramic support.

b. Cleaning:

The pottery was tested and cleaned with solvents to remove the hard dust and dirt. The 40: 60 ratio of ethanol and distilled water with few drops of liquor ammonia was used to remove the hard dirt which revealed the beautiful colours and patterns clearly.

c. Infilling of losses on the Glaze:

After testing the results of kaolin and epoxy resin, the mixture was finalized for infilling the losses. The putty was tinted to take an advantage of base colour during retouching. When in semi dry condition the putty filling was burnished locally using malinex sheets and spatula to achieve the perfect level and smoothness required for glazes.

d. Retouching:

The further step was to retouch the infilled losses employing reversible, safe and non yellowing medium. Hence watercolours were used. Lastly a coat of 4% Paraloid B72 coat was applied only on the areas retouched to replicate the shine of the glaze.

Conservation of the ceramic pottery was an interesting case study and a challenge due to its large size. The treatment has brought out the vibrant colours and its details which had been hidden for years. It now stands at the entrance of the Industrial Art Gallery in the Museum.

1.7 **Acknowledgements:**

Our sincere thanks to Mrs. Tasneem Mehta, Vice Chairman of Intach, Managing Trustee & Honorary Director of Dr. Bhau Daji Lad Museum and to Dr. O. P. Agrawal, Director General, ICCI for their trust and support.

1.8 **Reference:**

The Restoration & Revitalization of Dr. Bhau Daji Lad Mumbai City Museum,
By Mrs. Tasneem Mehta in 2009 (Published by the Managing Trustee for Dr. BDL Museum Trust)



1.1 Introduction:

Dhurandhar was a master of water colours, oil painting and line drawings. He was known for documenting the city of Mumbai and its people through drawings and sketches. He produced a large body of figurative work based on Hindu mythology, won the British government's award and gold medal for his work. He also founded the Fine Arts Institute in Mumbai, where he taught his students mythological subjects, which were painted in the academic style. He was one of Mumbai's most popular painters. 1st Indian Director of Sir. J.J. School of Art and also one of the first artists's to hold a one man show in Mumbai.

1.2 Object Details:

A Court scene by Rao Bahdur M.V. Dhurandhar, Gouache on paper,

Signed and dated MDhurandhar, 3. 1924 lower right

Size: 74cm x 235cm.

The painting depicts a court scene in a theatrical tradition

1.3 Examination:

According to the procedures, the necessary step of documentation was followed. Photographic documentation before conservation with details was recorded. Condition report was entered with the existing condition of the object.

Test Patches were done to finalize on the solvents to be used for cleaning.

1.4 Condition:

The large gouache painting on paper had suffered extensive damage due to termite attack.

The accretions of mud trails were still present under the newly pasted acidic paper board on verso.

The painting was unevenly pasted with acidic adhesive resulting in fold marks.

The previous retouching was done with local poster colours.

1.5 Conservation:

After examination and diagnoses of the causes of its degradation, the next step was to take action to stop the further deterioration and to bring it back to its original beauty. Steps taken are as follows:

a. Removal of acidic board :

The acidic paper board on verso was mechanically removed.

After removal of the acidic board traces of termite attack were scraped.

b. Cleaning:

Cleaning was done to remove the stuck dirt on verso with 1:1 ratio of Ethanol and distilled water.

Front of the painting was cleaned with ethanol and distilled water with the ratio of 60:40

c. Relining:

The painting was then relaxed, flattened and relined on wasli of Nepalese tissue papers.

d. Infilling of losses:

Cellulose powder with methyl cellulose mixture was finalized for infilling the losses created due to insect attack.

After drying, the putty filling was leveled.

e. Retouching:

The further step was to retouch, employing reversible, safe and non yellowing medium. Hence water colours were used to retouch the infilled losses keeping in mind the conservation ethics and standards



1.6 Conclusion:

Conservation of the court scene was very interesting. The treatment has now given the necessary strength to the painting. An appropriate dull gold frame with customized mount in the shape of the painting enhanced the overall look of the painting.

It's placed in the 19th Century Painting Gallery along with other prominent artists of the same period.

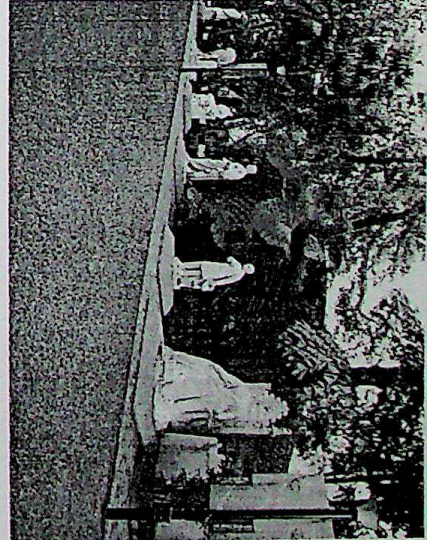
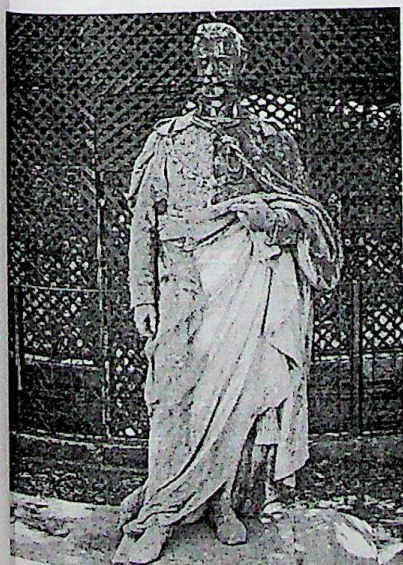
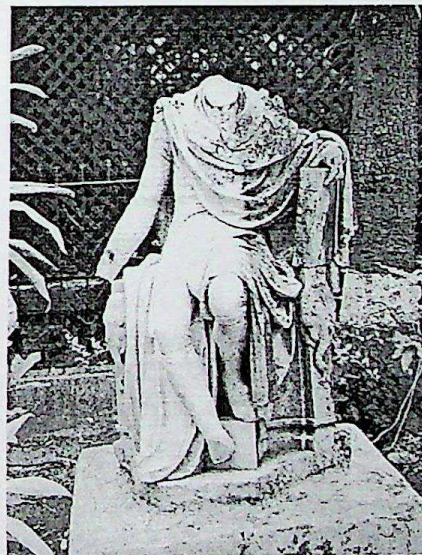
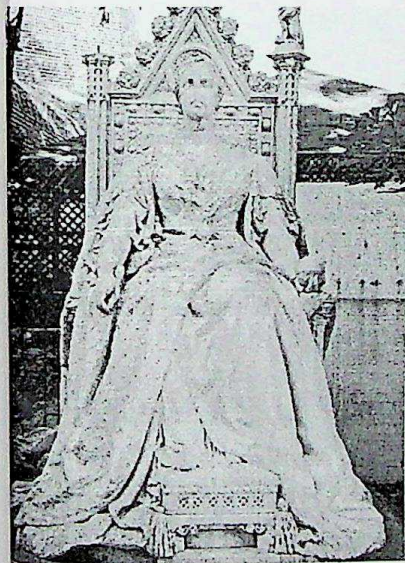
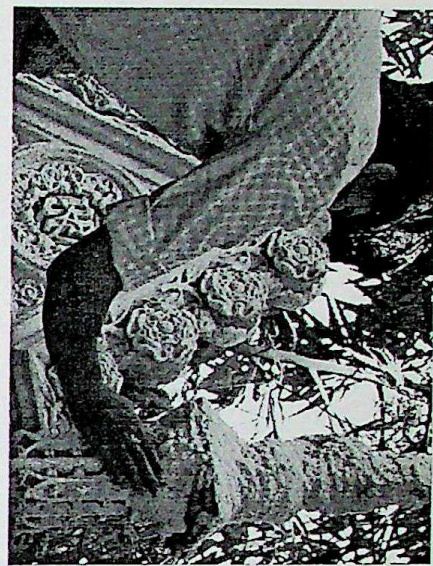
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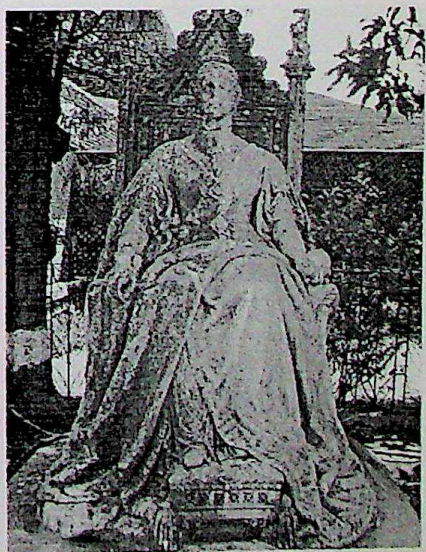
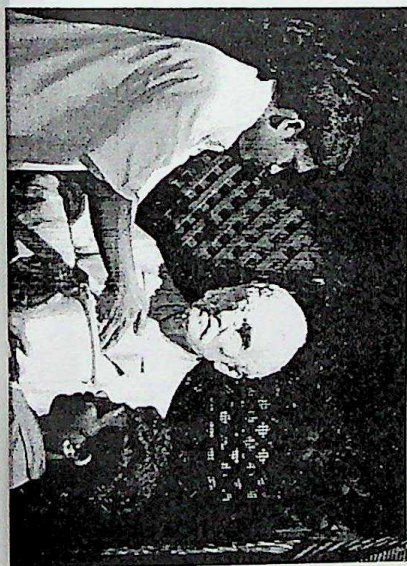
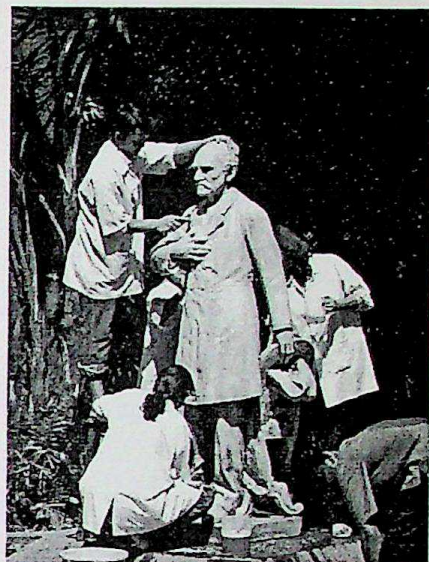
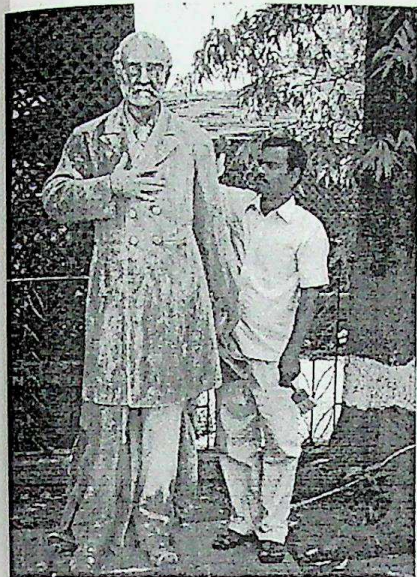
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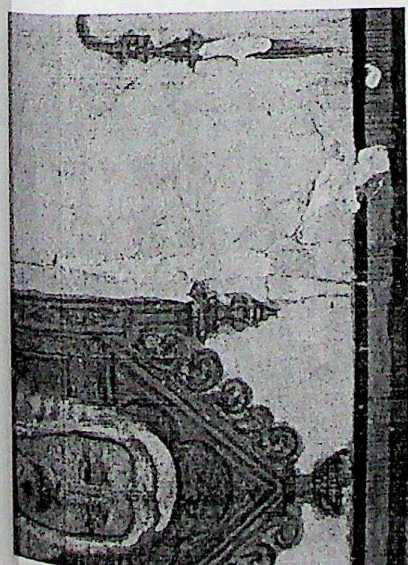
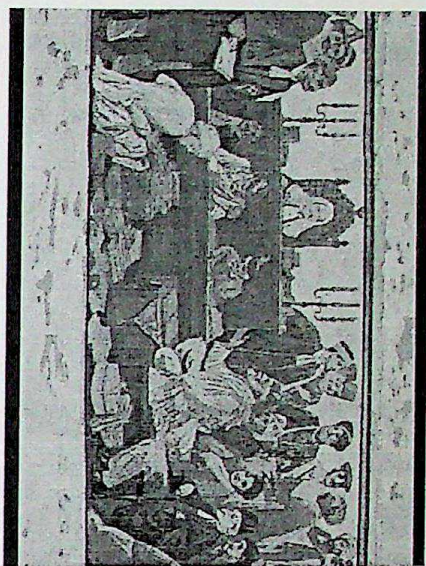
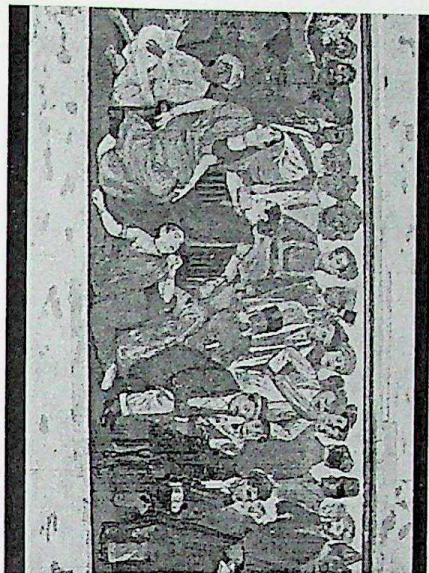
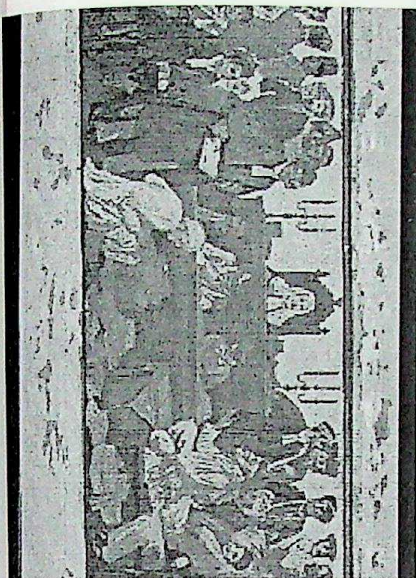
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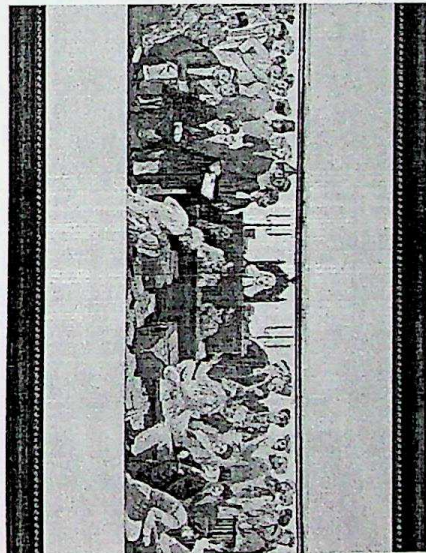




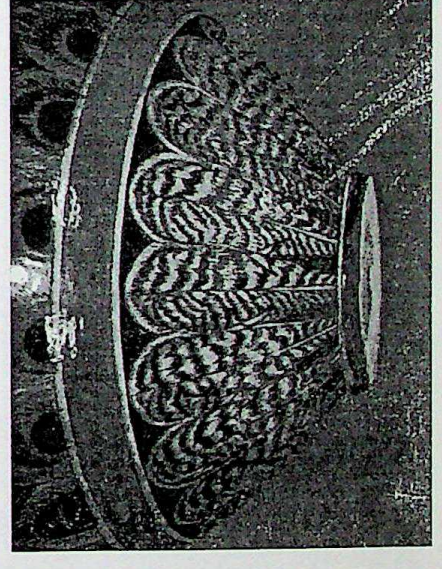
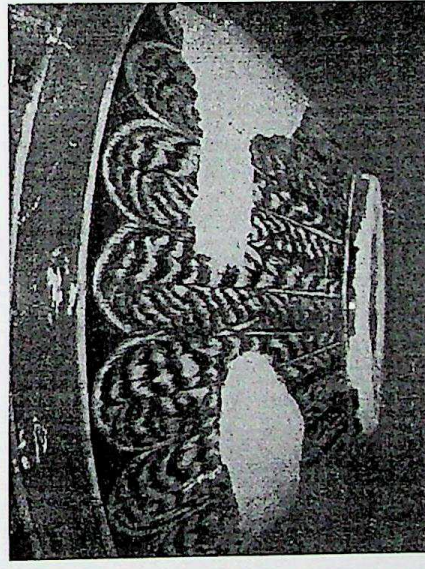
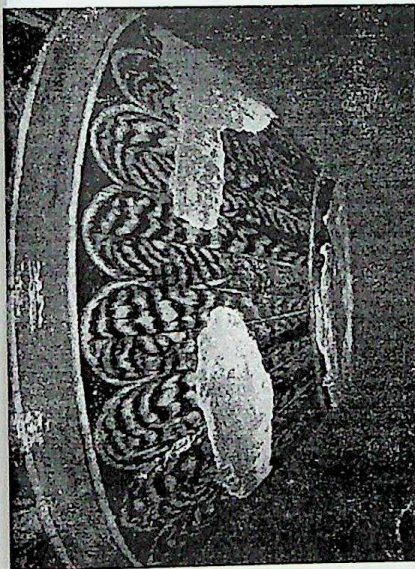
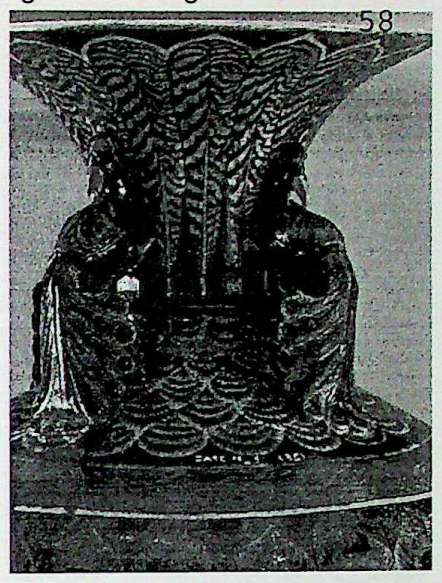
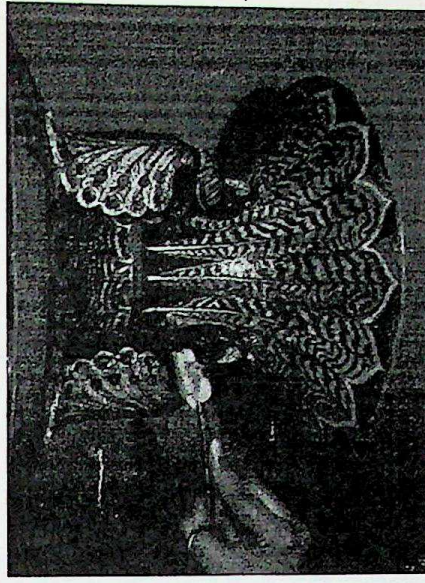
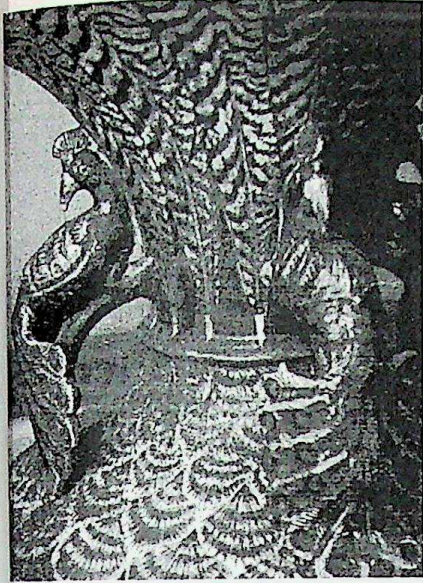




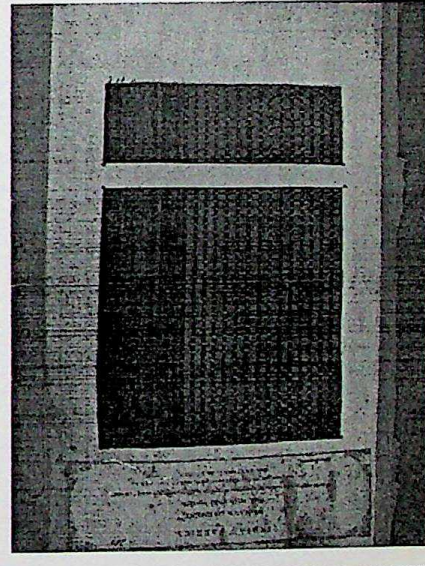
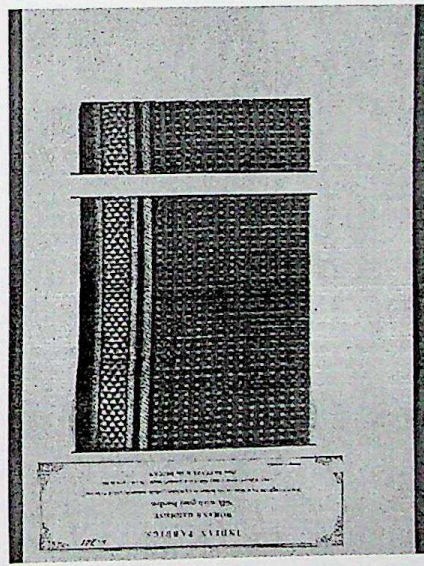
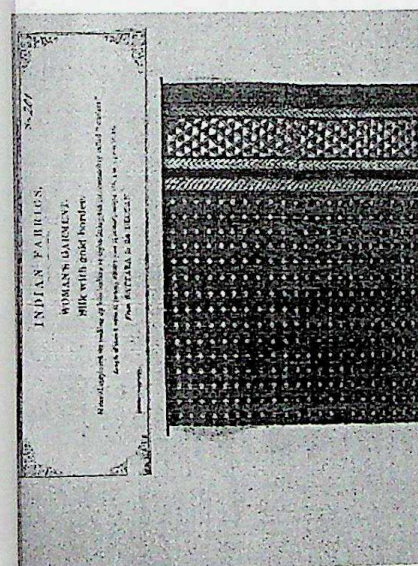
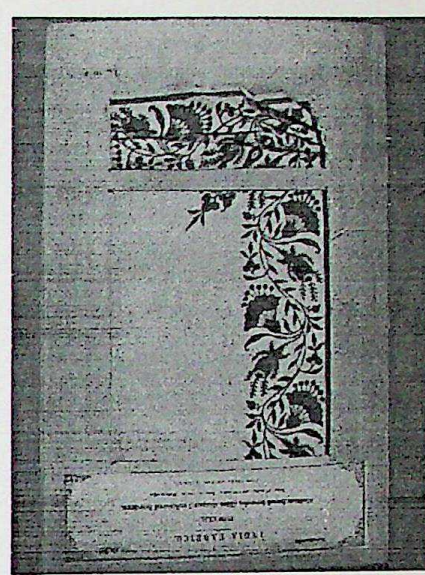
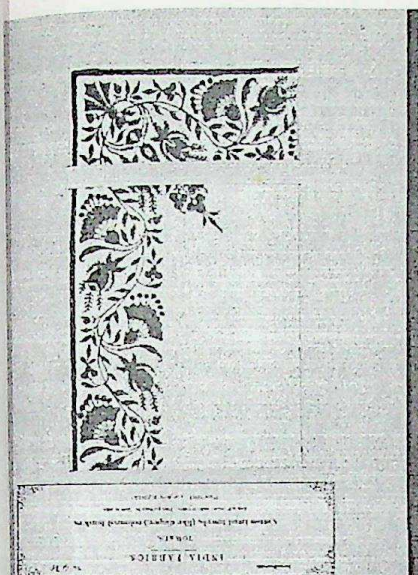




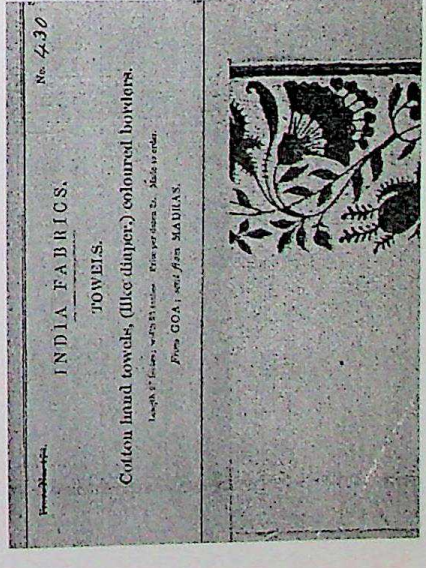
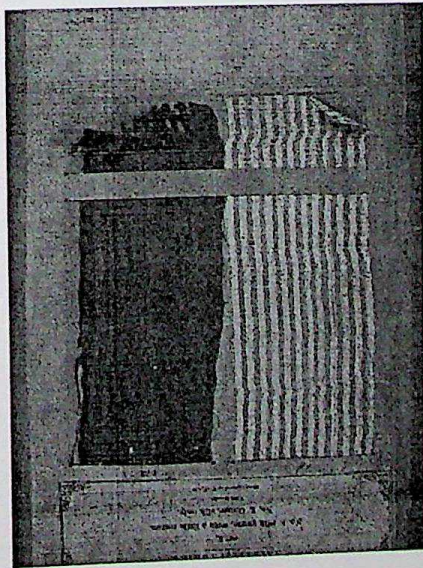
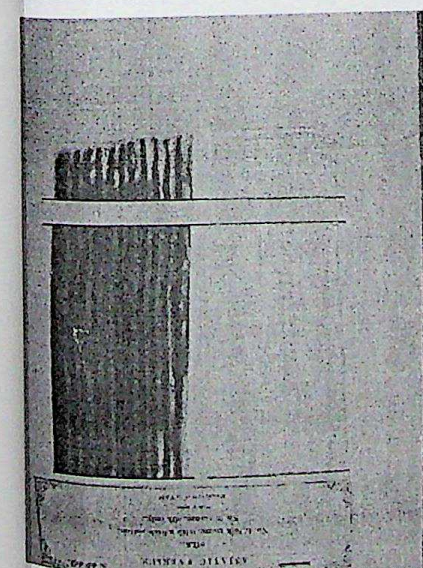
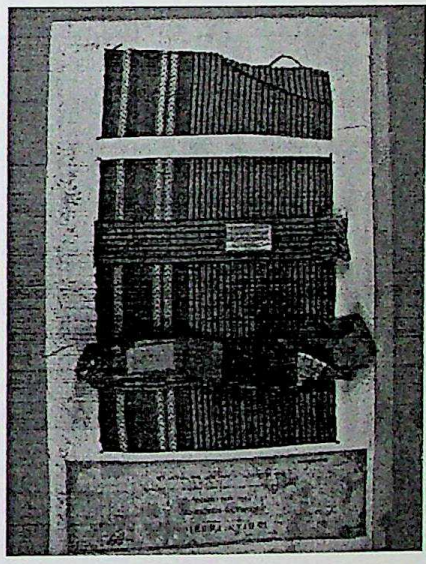
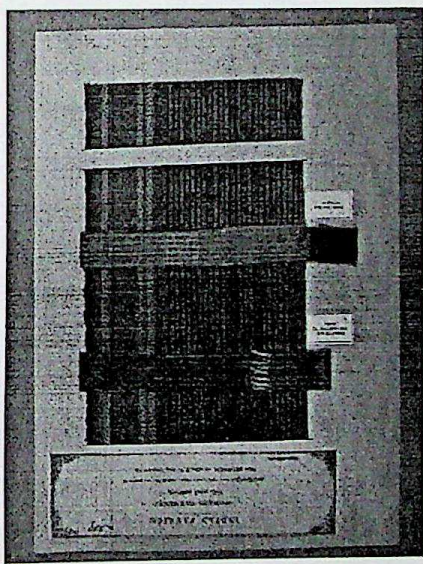
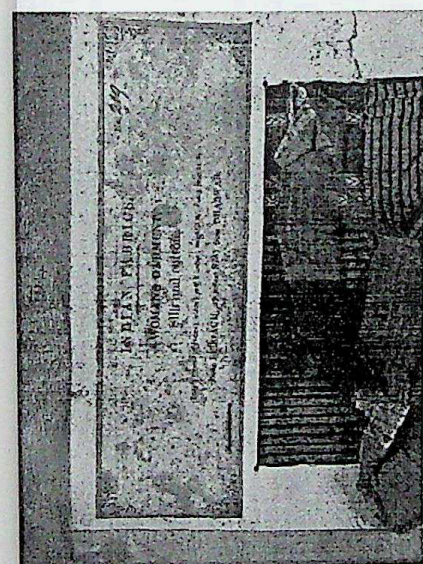
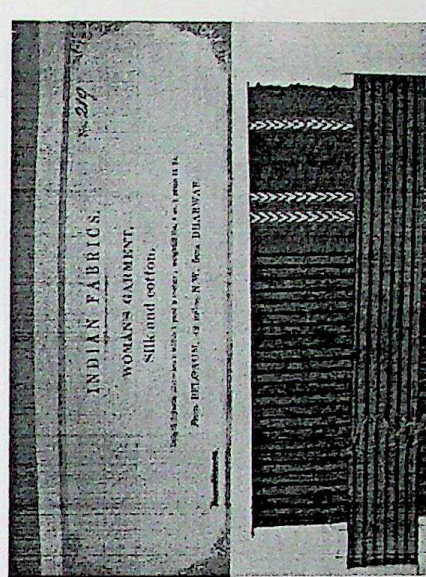
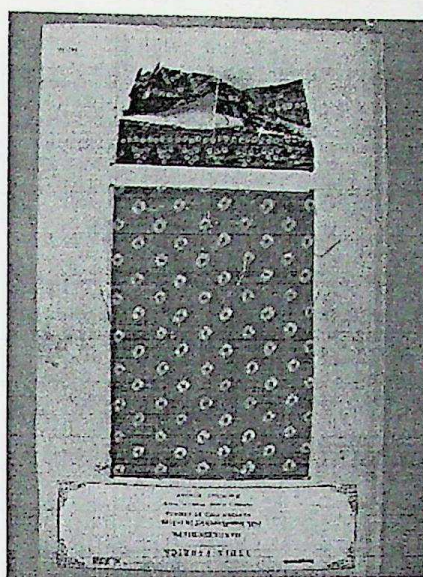
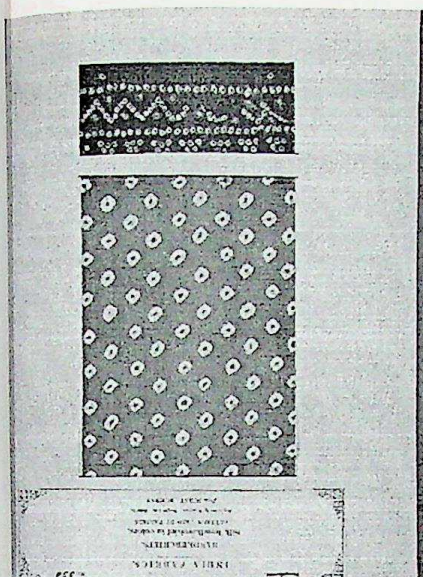




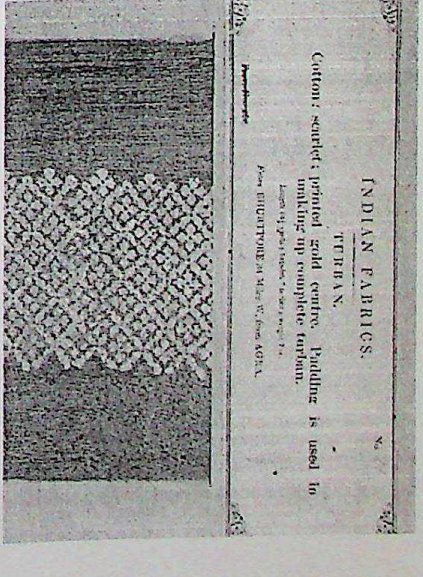
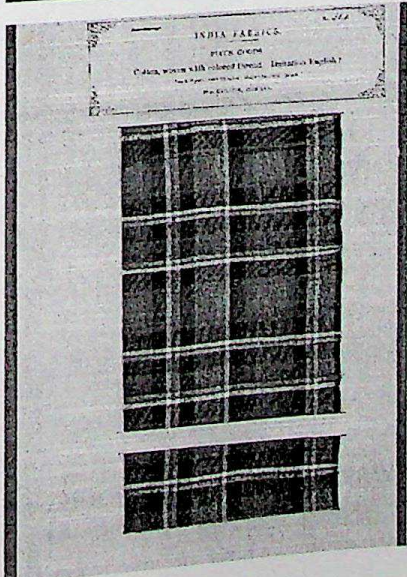
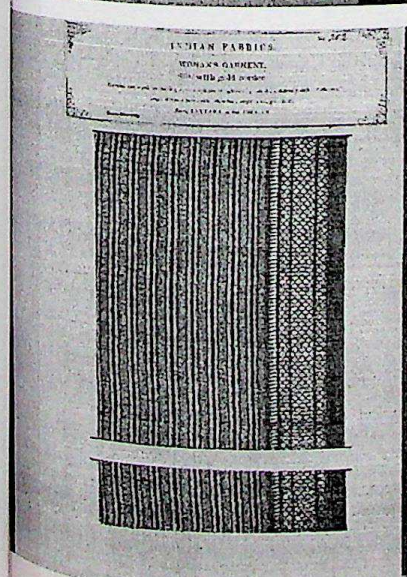
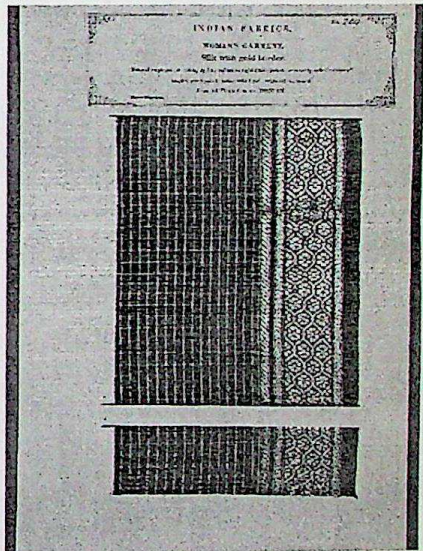
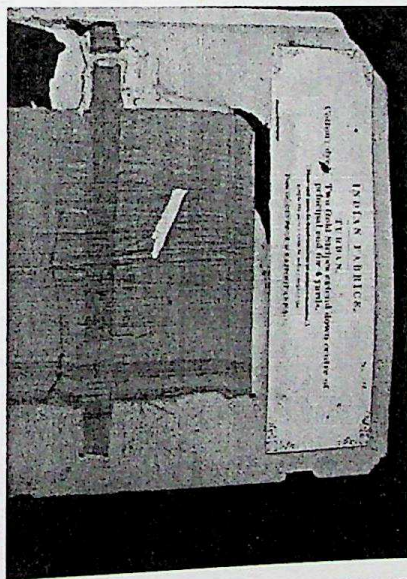
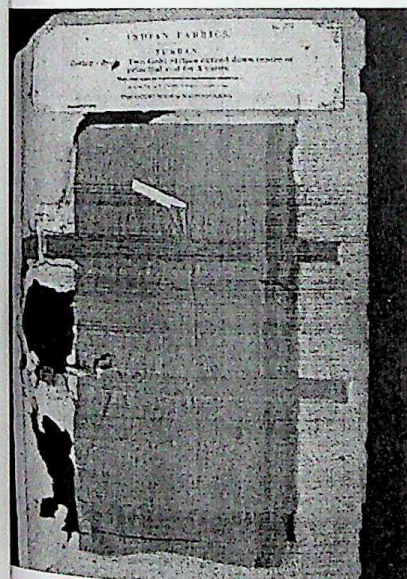
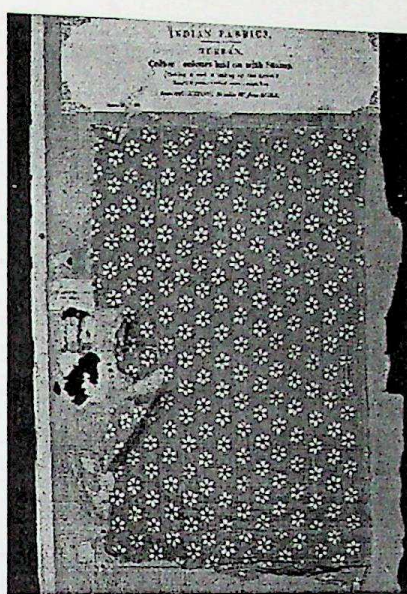
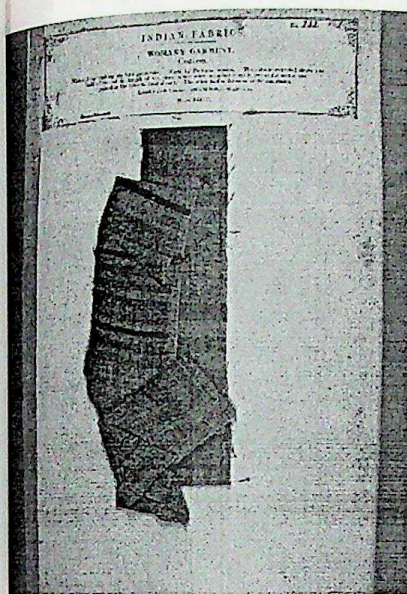


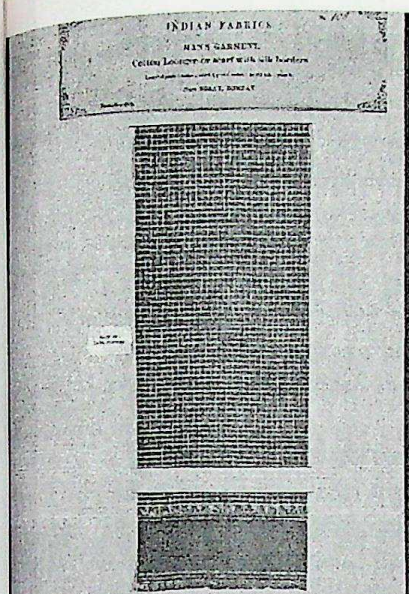












How to find funds for Heritage Conservation

by Vibul Varshney.

The city like Lucknow can be projected & developed as Tourist Historic City meaning both a particular use of history as a tourism source and the use of tourism as a means of the maintenance of artifacts, and where conservation is valued because, as in our personal lives, so to in the making of a nation's history we can't draw a clear-cut line between the present, the past and the future, the present is, but a fleeting moment and the future, yet to come. Therefore its only our past, which contributes to our conditioning, that we can analyse and hence, the importance of preserving it. We act as custodians for the future generations by shouldering our share of responsibility in safekeeping the precious heirloom inherited by us from our forefathers. And how could this be ensured?

Cities being a treasure-trove of old colonial style, mughal style or late Avadh style scattered all over, in old city to relatively new developments, needs maintenance & care from their owners, as the ageing parents require the economy aspect, hand in hand. Here the motivation strategy is required. The point is, how are they motivated? And who is going to motivate them?

Old buildings and old precincts are part of history, even though they may not be monuments. They are images one refers back to for awareness of a city's growth and evolution, the life-styles and aesthetic tastes, technology and crafts of a forgotten time. They reflect ancient choices made, ancient functions fulfilled.

The Archaeological Survey of India and State Department of Archaeology have severe constraints in finances as Government grants just about cover costs of maintenance. The Archaeological Survey of India and State Archaeological Departments also face other kinds of problems such as insufficient training of restoration engineers, in dealing with restoration of murals & wall paintings.

It has to be underlined that the forte of the Archaeological Survey of & State Archaeological Departments is preservation & protection and not conservation. Accordingly for the city, conservation could be considered as a process which enables the promotion of gradual development or revitalization rather than abrupt change and which incorporates preservation from destructive influences. Therefore, the pressure on area conservation has now come on the Master Plan or the Development Plan being prepared for all major cities or towns in the country. The frame work is primarily through the State Town & Country Planning Acts.

If heritage conservation is to be meaningful in India, partnerships have to emerge between Government & non Government organizations. Besides learning from the people, their active support, involvement and cooperation are equally vital for the success of conservation measures. It is important to make people understand that conservation ultimately is aimed at their own development. Apart from moral support, the direct involvement of and partnership with private organizations are crucial provided they work within the overall guidelines and objectives laid down. Moreover the local bodies should be involved in the process right from the stage of inception itself. Organizations and public bodies can serve as pathfinders by setting up the right examples and by intervening at crucial places.

Finally it is of utmost importance to dispel the misconception that conservation is always an uneconomical proportion requiring huge investments. More often than not, regular repair work and a well thought out maintenance policy may save considerable damage and

contribute to the life of a built fabric. The examples are many. For instance invaluable murals suffer from irreparable loss due to lack of maintenance and timely repair, choked rain water pipes result in damage of roof and uncontrollable vegetation growth, degenerating an important building into ruins over a short span of time and so on.

Be it maintenance, restoration, renewal or preservation, the approach must be selected on the basis of clearly identified objects involving people and organizations, craftsmen and users. Documentation of the process including details of techniques adopted and materials used are important for both the present and the future generations.

Jawaharlal Nehru Urban Renewal Mission is one of the programme where Govt. has taken initiative for heritage conservation.

The toolkit of JNNURM is specifically designed to highlight the role that heritage plays in the socio-economic and cultural profile of the JN NURM cities, and to suggest how heritage can be utilised to reshape and revitalise the cities economy and culture. The toolkit rests on the premise that heritage is an important lever – unused lever – for rejuvenating the economy and quality of life in cities.

Central to the preparation of a City Development Plan (CDP) with focus on Heritage is a comprehensive analysis of the existing status and future role of heritage. This is accomplished by preparing a Conservation Plan for the identified Heritage Zone. The Conservation Plan should form an integral part of the main CDP. The Conservation Plan will comprise of:

Identifying the Heritage Zones of the city, defining the importance of urban heritage in the socio-economic and cultural profile of the city, determining the legal and statutory framework for conserving urban heritage, identifying the institutional set-up, planning the infrastructure for servicing urban heritage, providing a financial profile.

For purposes of preparing a CDP for heritage protection, conservation and development, it is essential to begin by recording and analyzing the role that heritage plays in the socio-economic and cultural life of the city, by using such indicators as the number of visitors, number of persons dependent for their livelihood on heritage, income that heritage generates for the city, and the like. Specifically, this component should look at the following:

1. Number of visitors to heritage sites and the number of visitors expressing interest in non-tangible component of heritage, and trends in the numbers over a period of five years,
2. Composition of visitors i.e. domestic and foreign; pilgrims-local and from other parts of the country; age, sex and income composition of visitors and other characteristics of the visitors to the extent those are known;
3. Estimated number of persons dependent for their livelihood on heritage;
4. Estimated annual income generation from heritage; and
5. Year-round importance, or seasonal, or specific days.

It is important to provide a record of the ownership of the heritage, i.e., whether it is publicly-owned or privately-owned by trusts, individuals, or others, and to identify the weaknesses in the existing institutional arrangements, and to determine the needed improvements.

A key aspect to be covered in the CDP/Conservation Plan relates to the financing of the heritage in the city and the revenue generation e.g., using fee or charge for heritage sites and inspection.

A critical aspect of the analysis is the adequacy of the financial support for the protection and maintenance of the heritage, and the extent to which decay or deterioration if any, in heritage protection is attributable to financial constraints.

Enabling town planning acts should be brought into immediate effects in States where they do not exist at present. The entire system of rules and regulations as part of State Planning acts as also building byelaws as part of municipal acts should be thoroughly looked into as most of them have become very negative in nature. Too many development control agencies operate causing hardships and delays in getting plans sanctioned.

The conversion of old palaces in Rajasthan & Gujarat into Heritage Hotels are one of many useful modifications with conservation process. Then, what this new age tourist wants is not just scenic parks, good road views, comfortably priced hotels, but also a market where his wife can purchase the best bargained craft items from chikan work to zardozi to bonecraft bric-a-bracs, an amusement park where his children can have joy rides which reminds them of Delhi's Appu Ghar or Mumbai's Essel World, and yes a range of eating joints where the whole family can savour the best of Awadh's delicacies without paying a ransom charged by the posh hotels or without having to negotiate the intricate lanes of Chowk for a bite of Kulcha Nihari.

INTACH, today is, nation's foremost and largest non-governmental organization, working in the field of culture through their nation-wide network, volunteers have spread awareness about heritage, prevent acts likely to degrade their region's cultural and natural wealth. Further, they have always acted positively to preserve and enhance local heritage.

Awards for best maintained Heritage Building (Private) announced by INTACH is one of the many initiatives. This project has been done by INTACH at number of places and the most mentionable is of Hyderabad INTACH CHARMINAR award at Hyderabad where a cash award of Rs. 50,000/- is given to the owner of the best maintained heritage building (Private) every year and the award is known as INTACH Charminar Award. This award is sponsored by Charminar Cigarette people.

A key to the formulation of strategy lies in choosing least-cost strategy and one that will have the widest and lasting impact on the accomplishment of the vision and Conservation Plan.

Development of alternative strategies is both a technical process, i.e., of identifying their costs and benefits, and a consultative process involving, e.g. putting across to the stakeholders the relative merits and demerits of the alternatives and the implications thereof. Only when a sound strategy is available, that the subsequent phase of developing projects can be carried out in a meaningful manner and conservation process will have more logic and practical aspects taken care off.

CONSERVATION OF ART HERITAGE: PAST, PRESENT & FUTURE WITH SPECIAL REFERENCE TO CONSERVATION OF ART OBJECTS IN INDIA

by A. S. Bisht.

INTRODUCTION:-

1. Independence ushered a large scale concern for the care of art heritage in India on modern lines.
2. Museums, Archives & Archaeology Dept, of state and central levels were created.
3. Such institutions were like store houses of art objects which were simply kept in their possession.
4. Museums & Archives which were there earlier lacked modern technology of collections, documentation, proper storage, scientific conservation & Display based on modern techniques.
5. The techniques abroad were studied by our experts after visiting these museums & foreign experts were invited by their Indian counterparts.
6. Conservation facilities at our disposal were disproportionate to actual needs.

NEED FOR NATIONAL MUSEUM OF INDIA

7. First President & Prime Minister of India very much wanted to do whatever they could to bring the Museums & Archives at par with institutions abroad.
8. National Museum of India, as it was called then, was created as a mouthpiece of Indian culture keeping the visits of the forthcoming foreign dignitaries to India.
9. It's own building was planned after the visits of our Architects round the globe so that the building could be constructed & the space given to the NM in the Rashtrapati Bhavan, could be vacated.
10. The exhibits which returned from Indian art exhibition abroad and on lone to NM could be stored well, conserved well, displayed well, and interpreted well.

CONSERVATION OF ART MATERIALS WITH SPECIAL REFERENCE TO COLOUR OF ART OBJECTS IN INDIA

1. Introduction: The conservation of art materials is a branch of knowledge which is of increasing importance in India.

2. The conservation of art materials is a branch of knowledge which is of increasing importance in India.

3. The conservation of art materials is a branch of knowledge which is of increasing importance in India.

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NEED FOR NATIONAL MUSEUM OF INDIA

5. The conservation of art materials is a branch of knowledge which is of increasing importance in India.

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8. The conservation of art materials is a branch of knowledge which is of increasing importance in India.

11. N.M. was inaugurated and opened for public view in December 1960 and govt. appointed Dr. (Mrs). Grace Morley from ICOM, Paris, as it's first Director.

12. Dr. K.N. Puri was Assistant Director, Shri C. Sivaramamurthy was Keeper (Archaeology) and Shri T.R. Gairola was Chemist at this point of time.

LATER DEVELOPMENTS:-

13. I came from the Chemistry branch of A.S.I. Dehra Dun in April 1958. The collection of the CAA Museum of ASI was merged with National Museum along with some of it's staff to look after. Dr. Agrawal and few others came in July 1958 after this was agreed.

PROJECTS TAKEN UP BY THE LAB OF NM:-

14. Transfer of Chamba murals boosted our confidence having done the work with success after visit to Italy by Dr. O.P. Agrawal. We completed the Kullu, Skkim and Kotah projects later.

15. A Painting Conservation training for the NGMA was held by both of us after my return from Australia in 1961.

16. This helped the creation of a Central Conservation Laboratory for Museums on UNESCO'S recommendation & we started helping other museums of India.

17. NRLC was planned & created by the Govt. of India on the recommendation of a committee with Dr. Agarwal as it's Member Secretary.

18. NRLC, Lucknow started functioning

which was to conduct research, treat artifacts from all other museums, as a National Laboratory till Dr. Agrawal retired in 1989.

BIRTH OF INTACH CONSERVATION:-

19. In 1984 INTACH was established as it was felt that artifacts in the collection of non-govt. organization are suffering due lack of conservation help.

20. The reasons were that the Government organizations are only looking after their own objects and help if needed are able to provide to Non - Govt.

institution if they have free time. In this context the Project Restoration of objects of non Indian origin started by the national Museum at the NM, NRLC and VMH was another step with which I was intimately connected at one time.

21. Govt. depts. were not able to cope with the need especially because of their policy of not filling the vacant posts.

22. NMI a new organization was thus created in 1989 and started making available candidates with MA degree.

23. I retired from the NM in march 91. Batches of two- three years had enough experience to handle artifacts of every type. I continued to teach as a member of NMI's Guest faculty for lectures.

CHANGED SCENARIO:-

24. Staff of NM was reported to be less over in the past years and they even resorted to out sourcing. Meanwhile INTACH had it's 10 centers under the able guidance of it's present DG.

25. This has helped most of the artifacts decaying in private possession all over. As reported in the ICCI, Newsletter Dec.2007 that their services may be extended to departments under the Governments, if requested.

26. Certainly this is going to help all the artifacts wherever these are. But I am not quite sure about it's long feasibility, keeping the magnitude of the problem in view as a Nation, only time would tell.

27. Many Individuals have started conservation/Restoration of artifacts including Oil Painting. They I believe are charging fee from the owners as agreed by them mutually. However, I hope that the follow up measures are being ensured by them mutually for the best.

28. I think the concept of Public -Private participation /Out sourcing is another step waiting to step in. In conclusion I wish them success as almost all of them were associated with me in away or other. It is for the Owners to think and decide.

A.S.BISHT

Challenges in preserving the objects that speak

Ritu Jain
Abdur Rasheed

Abstract

A conservator specializing in folk related objects has to develop skills in understanding the often very complex material technology of these artefacts. They work with the objectives of preserving as much evidence of an object's life history as possible to allow it to be understood and interpreted in wider cultural context. Treating such objects has a bigger challenge since use of substandard locally available materials in the object can accelerate deterioration. IGNCA is making a modest attempt to justify the preservation of such objects which are an integral part of our society.

Introduction

A scroll is a roll of papyrus, parchment or paper which has been written, drawn or painted upon for the purpose of transmitting information or using as a decoration. It is distinguished from a roll by virtue of being intended for repeated use rather than continuous, but once -only use of the roll.

Structure- A scroll is usually divided up into sections which are sometimes separate sheets of paper glued together at the edges or may be marked divisions of a continuous roll of writing material.

Patua Paintings (West Bengal)

Scroll Paintings in different parts of the world, especially China and Japan, have been associated with the history and culture of these civilizations. Similarly scroll Paintings in West Bengal too are a part of an elaborate cultural performances, where they are unrolled while the story accompanying the pictures is sung. Known as Patua Paintings they narrate mythological and historical stories. The Patuas of West Bengal have practiced this art for centuries and have adapted their art form according to the needs of the time. This capacity to adapt has ensured that Patua paintings are one of the few surviving indigenous art forms of the region.

The Patuas of West Bengal are interesting anomalies. They are an endogamous caste whose religion is difficult to determine, for they follow both Hindu and Muslim customs. Muslim rituals mark all their important ceremonies but they



paint Hindu stories in their scrolls and also observe a number of Hindu Festivals. The Patuas visit villages and go from house to house with their bag of scrolls. They narrate stories while unrolling the scrolls; in return of his service he is paid in cash or kind. Most Patuas happen to be men and there are few, if any, women Patuas.

IGNCA conservation laboratory received about twenty two scrolls belonging to various regions of the country. Two case studies which raised number of questions in our mind are been to put forward for discussion, advice and suggestions.

KRISHNALEELA-

This painting had sheets of paper sewn together and painted upon. The scroll narrated mythological stories and in recent times they have incorporated other themes to cater to the changing taste of their customers. Contemporary Patas have dealt with historical events, ecological disasters such as storms and floods, and commentary on social issues.

A scroll from this category is titled, *Krishna Leela* this scroll has a religious theme, narrating events of Krishna, in first part, which comprises six panels, dealing with scenes from Vrindavan to Kansa Vadha .interestingly in second part Artist chose scenes from great Epic Mahabharat including the kaurav Milan and dharma sabha scenes.

Condition Assessment

This scroll has dimension of (298.5 x 9 inch), each panels are sewn and painted using water colors. As understood, due to socio economic conditions of the artist the material used for painting is cheap and whatever has been easily available has been used.

Prior to active intervention the following problems were noted during observation.

1. Accumulation of dust and dirt mainly due to bad storage and handling
2. Stiffness of the scroll (probably due the adhesive used for mounting)
3. Loss of adhesive at various place (especially at joined panels)
4. Minor tears
5. Development of creases or cracks from rolling and unrolling. Edges were abraded

6. Folding marks and wrinkles were prominently visible (Horizontal creases of hand scrolls occur from improper handling, such as a hand squeezing the scroll as it is unrolled)
7. The scroll was lined with locally available thin colored cotton cloth
8. Bamboo sticks were fixed at both end for hanging purpose using stitches
9. Previously paper strips have been pasted to mend the tears. these are causing creases
10. Treatment:

A comprehensive documentation both visual and written sheet was prepared, post documentation, the scroll was provided with following treatment

1. Dry cleaning with soft Japanese brushes
2. Flattening and removal of wrinkles and fold marks
3. Application of suitable adhesive on required area.
4. The previous interventions was not disturbed



Garoda painting Fig. 1 & 2 state the general condition of the scroll. Garoda painting has in an elaborate study on Garoda paintings have described that in Gujarat the art of stories with the help of painted pictures is practised by the members of Garoda community. Garoda are priests of the lower communities and apart from practising astrology, palmistry and rituals worship they narrate stories also. With a paper scroll with pictures painted in water colour one below the other separated with thick line move from door to door in search of patronage. He in his paper in the journal of NCPA, Sep 1980, has narrated a very interesting description of a scroll reader 'He had a scroll in his hand and, as he offered to narrate stories, he half opened the scroll in his hand

and then closed it when he received a negative response. Often people gave him a coin or put some grain in his shoulder bags, without asking him to narrate the stories. While he was still moving about in the village, some women had second thoughts and called him back. He washed his hands and face, drank some water and sat down on a strong-meshed cot in the open courtyard. In the meanwhile the villagers gathered around him. HE opened his scroll with the first panel and related in verse and prose the import of the panels and their ethical implications. As the interest and response from the audience heightened he rose and approached the crowd, holding the open scroll in his hands and collecting coins or currency notes on the scroll itself.

The scroll with dimension of (119 x 80.2) was based on religious theme, prepared on thin paper and water colors were applied. Further, in later phase a lining of canvas was also given. The scroll witnessed loss of support at numerous places.

The following observations were taken into account.

1. Accumulation of dust and dirt
2. Minor tear
3. Previously restored (lining was done)
4. Right edges witnessed heavy loss due improper handling and storage
5. Opening of left corner was lost
6. Creases / Wrinkles were present at the end of scroll
7. Cracks were present
- 8.

The scroll was also given treatment.



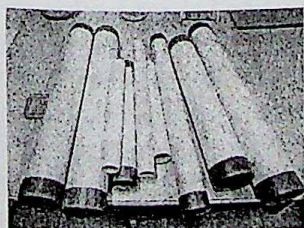
Historical scrolls were desired just before an exhibition and approach was to provide conservation support in available time so that they can be

showcased, and in coming future detailed suitable treatment may be taken. While treating these scrolls some pertinent question were raised in the laboratory .

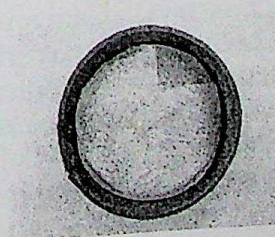
Questions

1. Most of the scrolls have been previously lined (which seems to be done un- professionally done). Should they be removed and relined with suitable materials and technique.
2. Should damaged or loss area may be filled.
3. The ink is water soluble, so whether ink has to be fixed
4. What should be lining materials
5. There are presence of paint loss, should these minute loss may be retouched
6. Can a cover of Japanese tissue paper be put on the scroll, at the time of exhibition that will be turned back and later during storage that will work as protective layer.

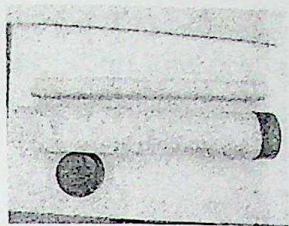
Storage The purpose of temporary storage was mainly for transportation and mounting of the exhibition. After much debate and deliberations it was decided to prepare temporary cylindrical storage pipe. Before rolling, Japanese tissue paper was kept as protective covering on paintings. The inner pipe was covered with suitable paper on which the scroll was rolled carefully; the scroll was further covered with thick acid free rice paper. As an added protection a layer of handmade paper was also given. The entire component was tied loosely using soft cotton string. The entire thing was then placed in another larger cylindrical storage pipe. The pipe had covers on both ends. A padding of suitable materials was fixed inside the cover to avoid movement and unnecessary jerks to the art object the scroll



Storage of Scroll



Inner padding of the cap



Inner and outer pipe with cap

A few observations as a conservator

1. Hanging scroll has no support except the simple top and bottom rods when it is hung for display. Sometimes the front surface shrinks more than the reverse side or vice versa. In other words, when front and reverse have uneven tensions, because of the dryness or high humidity, distortion of the scroll occurs. This can be seen when it is hung.
2. It requires technical expertise and experience to produce even tension and times distortion is also often caused by the mounter's technical mistakes. Sometimes the fibers of the backing paper are over-stretched or not stretched enough for the front layer and back layer. An even tension must be maintained, especially if these different kinds of paper at front and at back are applied
3. Often the narrow side borders for scrolls shrink more because the pasted areas shrink most. The joints are so close to the edges, which are also folded with the paste. These areas have a tendency to shrink more than the rest and this phenomenon can cause overall distortion.
4. The wooden rods at the top and bottom also warp if the wood is not correctly aged. The grain of the wood must be also straight.

. When a scroll is rolled, the outside layer stretches and the inside layer is compressed. This compression may cause the scroll to crease. Also, when the scroll is rolled for a long time, both the inside layer and outside layer tend to stay somewhat curled. Then when the scroll is unrolled, the back side of the scroll is compressed. The reverse compression also causes creases. Repetition of this action causes the surface to break and the weak areas start to develop cracks, creases and severe ridges. Therefore, thinner paper for use in backing to make scrolls is better, but thinner paper presents different problems: not enough rigid support for the painting as with thicker scrolls. Once cracks or creases occur, fibers break, and the creases progress into serious ridges.

Conclusion – with respect to the traditional and cultural sanctity of the art and the artist there is a need for a balance to be drawn regarding the conservation



treatment to be provided. It is strongly felt that minimum intervention should go long way in preservation and propagation of the diminishing art.



**"CONSERVATION OF ART HERITAGE: PAST, PRESENT
AND FUTURE, WITH REFERENCE TO CONSERVATION
STUDIES IN INDIA"**

by V.P.Mathur
Director (Admn.)
ICCI, Lucknow.

1. INTRODUCTION: India being a vast country, boasting of one of the earliest civilizations in the world, has got, historical monuments, sites and heritage objects in very large number. It was however only in late 19th century, during the British regime, that importance was paid by the Govt. to such heritage. In 1861, Sir Alexander Cunningham, with the support of the then Viceroy of India Charles John Canning, founded Archeological Survey of India (A.S.I.) for exploring, excavating, conserving, preserving and protecting Archaeological sites and monuments. Later, Cunningham became the first Director General of A.S.I. in 1871 and held the post till 1885. Very many important ancient archaeological sites, rock painting sites, ruins of temples and monuments were discovered during his tenure. He also got several important sites excavated which yielded a large number of antiquities which needed to be studied, preserved and displayed/stored so as to be available to scholars of History.

2. ESTABLISHMENT OF MUSEUMS: Thus need for establishing museums for keeping antiquities, studying, classifying, storing, displaying and publishing them was felt. This led to the establishment of State and other Museums in various states in late 19th century and early 20th century some of examples of which are as follows.

<u>Sl.No.</u>	<u>State</u>	<u>Name of the Museum and Year of Establishment</u>
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1.	West Bengal	Indian Museum Kolkata 1814.
		Govt. Museum, Chennai 1851.
2.	CC-0. Tamil Nadu	State Museum, Hazratganj. Lucknow

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|-----|----------------------------|---|
| 3. | Uttar Pradesh | State Museum, Lucknow 1863. |
| 4. | Karnataka | Karnataka Govt. Museum & Venkatappa Art Gallery, Bangalore 1865. |
| 5. | Goa | Institute Menzes Braganza, A Museum of Art & Craft, Panaji 1871. |
| 6. | Maharashtra | Dr.Bhau Daji Lad Museum, Mumbai 1872. |
| 7. | Uttar Pradesh | Curzon Museum (now called Govt. Museum) Mathura 1874. |
| 8. | Kerala | Napier Museum, Thiruvananthapuram, 1880. |
| 9. | Gujarat | Museum & Picture Gallery, Vadodara 1894. |
| 10. | West Bengal | Bangiya Sahitya Parishad Museum, Kolkata 1894. |
| 11. | Jammu & Kashmir | Sir Pratap Singh Museum, Srinagar 1898. |
| 12. | Maharashtra | Chatrapati Shivaji Maharaj Vastu Sangrahalaya (Earlier called Prince of Wales Museum) 1909. |
| 13. | Uttar Pradesh | Bharat Kala Bhawan, Varanasi 1920. |
| 14. | Andhra Pradesh | State Museum, Hyderabad 1930. |
| 15. | Orissa | Orissa State Museum, Bhubaneswar. Established in 1932 at Cuttack and later shifted to Bhubaneswar in 1948. |
| 16. | Delhi | National Museum, New Delhi 1949. |

Gradually, as more and more antiquities were being found, Governments at the Centre and in States realized the importance of preserving the material heritage in the shape of sculptures, terracottas, paintings, manuscripts, textiles, potteries, ancient tools, other art objects and artifacts of various kinds, and it resulted in establishment of many more museums all over the country. According to the survey carried out by Mrs.Usha Agrawal, there are more than 747 museums in India now.

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3. CONCEPT OF CONSERVATION: The concept of heritage conservation till the middle of 20th century and even till a decade later was very different with museum Directors and Curator, than what it is today. A museum Curator earlier thought, it was enough to just dry clean a museum object and protect it from physical damage or insects. The knowledge of factors like, light, humidity temperature and microorganisms and pollutant gases causing damage to objects was not available with most of them. The reason being, that no formal training or education in heritage conservation was available to such museum personnel till then. There were just a couple of museums in the country which had a conservation chemical laboratory and a conservator or chemist on their staff, who too perhaps did not have proper training. The A.S.I. however head a well organized Conservation branch under the Archaeological Chemist in India, for conservation of monuments and archaeological objects.

Heritage Conservation or Art Conservation as it is generally called, acquired gaining importance in India only in the second half of the 20th century, after the establishment of **ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property) at Rome in 1958** by the **United Nations agency UNESCO**.

Incidentally the proposal to create an intergovernmental centre for the study and improvement of methods of restoration of cultural heritage was adopted by the **UNESCO General Conference in India at New Delhi in 1956**, as a result of which ICCROM was established at Rome in 1958, with only a few States of the World including India as its Member. Presently however there are **129 Member States of ICCROM**, which is playing a very important role in **Conservation** through its various training programmes and publications etc. The main areas relating to preservation of heritage covered by the activities of ICCROM are.

1. **Research.**
2. **Collection and dissemination of information.**
3. **Offering consultancy and advice.**
4. **Advice training.**

THE CONSERVATION OF THE
 The first of the main objects of the
 Government is to preserve the
 natural beauty of the country and
 to protect the interests of the
 people who live in it. It is
 the duty of the Government to
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 Government should also see
 that the country is kept in a
 state of health and that the
 people are able to enjoy it.

5. Promoting awareness of the value of preserving cultural heritage.

4. PAST AND PRESENT SCENARIO OF CONSERVATION STUDIES IN INDIA:

4.1. Courses by Universities: When importance of museology and conservation as disciplines for scientific study was realized by museum Directors and administrators in India, efforts were made to establish courses in these subjects. To begin with some Universities and Institutes in India started in the 1960s and 70s post graduate **Diploma or Degree** courses in **Museology**, of which, conservation was only a minor subject.

4.2. ROLE OF NRLC: It was only after the establishment of **National Research Laboratory for Conservation of Cultural Property (NRLC)** in 1976 at Delhi with the efforts of Dr.O.P.Agrawal who was then heading the conservation set up in the National Museum, Delhi, that the foundation of a scientific, study, research and training in conservation of heritage objects and sites was laid in India. **Dr.O.P.Agrawal** who had a vast experience of conserving heritage objects in **A.S.I. and National Museum**, and had also received training abroad realized the need for importing proper training in conservation. Thus after becoming the founder Head of N.R.L.C., he started a much needed 6 months' training **Course in Conservation in 1978 when N.R.L.C.** was shifted from Delhi to Lucknow. A 2 weeks course in Preventive Conservation also conducted by N.R.L.C. This was perhaps the first proper training in conservation of heritage objects, in India.

4.3. ROLE OF INTACH ICCI: It was in 1985 that the nucleus of present ICCI was formed with Dr.O.P.Agrawal's efforts, as a small conservation unit under INTACH to provide much needed conservation facilities and training in conservation. After retiring Dr.Agrawal himself

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joined the ICCI as its full time Director General in 1989. Soon thereafter the organization developed into a network of 10 conservation centres all over India, carrying out conservation work and also organizing regularly training programmes and workshops. ICCI has so far organized more than 210 training programmes. The Bhubaneswar Centre has organized **an International Training Course** every year from 1999 to 2004 with the support of Norad. To cater to the needs of completely ignorant collectors of palm leaf and paper manuscripts in rural areas of Orissa, the Bhubaneswar Centre also organized 44 workshops in Preventive Conservation in villages which proved immensely useful.

4.4. CREATION OF NATIONAL MUSEUM INSTITUTE: Another land mark in providing facilities in heritage conservation in India was the establishment of **National Museum Institute of History of Art Conservation and Museology** in the National Museum premises at New Delhi in 1983. In 1989 the Institute was given the status of a **Deemed University** and it has thus been running Master's level courses in Art Conservation and Art Restoration, besides in History of Art and Museology. It also offers Doctoral level research facilities.

4.4. TRAINING COURSES IN CONSERVATION BY OTHER INSTITUTES: At present there are around six Universities in India including Aligarh Muslim University, B.H.U., Varanasi, Baroda University, Indraprastha University, New Delhi and Osmania University, Hyderabad, which offer Diploma, Graduate and Post Graduate courses in Heritage Conservation.

There is a **School of Archival Studies** in National Archives of India which offers a one year post graduate **Diploma Course in Archival Studies**, which includes conservation of paper material and manuscripts.

5. FUTURE OF STUDIES IN CONSERVATION IN INDIA

5.1. THE NEED: As everyone will agree, the facilities available for **Studies In Conservation of Heritage Objects in India** at present are far from adequate, taking into consideration the need for conservation of a very large number and varied type of heritage objects available in the museum and with many private and corporate collectors. Even the contemporary works of art created about 50 years back now need conservation. Thus the number of objects needing conservation will keep on increasing as the time passes. I therefore suggest that the Govt. should pay greater attention to Studies in Conservation and establish in atleast 15-20% of Universities in each State, Graduate & Post Graduate Degree Courses in Heritage Conservation, so that adequate number of qualified and knowledgeable conservators are available to Museums and private collectors for conservation. The syllabi of courses at various level need to be formulated very carefully, with greater emphasis on practical work. There should also be facilities for research conservation.

5.2. REGISTRATION OF CONSERVATORS: To check quacks and frauds from practicing conservation and ruining the heritage objects there should be a body of senior experts, say "**Conservation Council of India**" to be appointed by **Govt. of India**, under legislation which should register the qualified conservators after ascertaining their credentials and knowledge, as is done for **Medical Practitioners and Advocates/Lawyers**. There should be legislation that only registered persons can taken up conservation work of heritage objects.

5.3. DEVISING COURSES AND SYLLABI: The said body of experts should evolve a **National Policy for Conservation Studies** taking a holistic approach. It should also decide the subjects and topics to be studied under different level courses taking into consideration the type of heritage objects generally found in India, our climatic and environmental conditions and the nature of damage and diseases in heritage objects. As in medical studies till the graduation level

conservation of all types of heritage objects should be taught, but at Post graduate level there should be specialization in conservation of a particular group of objects, like **Paintings or Paper objects or Stone objects or Metal objects or Textiles, etc.**

5.4. RESEARCH IN CONSERVATION: It is also essential that some more research institutions in conservation be established in India to find new improved and easier methods of conservation and to find new indigenous and cheaper materials for use in conservation. Research should also be carried out on problems referred by conservation laboratories. It is very important that the results of research carried out by the Institute are published regularly, for the benefit of all conservators. It would be desirable if NRLC starts a quarterly journal to publicize their research activities.

5.5. ON LINE COURSES: For the benefit of those who are employed or otherwise not in a position to join an Institute or University for studying conservation, Distant Learning Courses should be conducted by an Institute or University, through internet.

5.6. INTERNSHIP: It should also be compulsory for students of conservation courses to undergo six month's **Internship** in an approved conservation Institute, before getting the Degree and license to work as a conservator.

5.7. FINANCIAL SUPPORT BY GOVT.: Unless adequate finances are available with museums for getting the msueum objects conserved, the very purpose of promoting studies in conservation will be defeated as the qualified persons will not get jobs or assignments to carry out conservation.

Therefore, Culture Department of Govt. of India and that of State Govts. should considerably enhance the budget for Museums for conservation of objects, which should not be used for purchase of equipment as is happening now. There should also be provision for adequate number of **stipends**,

fellowships or research grants in conservation courses to attract young talent.

It should also be ensured by controlling authority that all important objects in a museum are being examined atleast twice a year and preventive conservation and also curative, if required, is carried out, which would of course be possible only when adequate funds are available to museums for appointing or outsourcing conservators.

Govt. of India has provided a scheme for grant for the development of **Non Govt. Museums and also for development of conservation facilities in the museums.** There is however no schemes of Govt. as yet, through which an important heritage object, or a wall painting site of national or regional importance could be got conserved or subsidized. There are many individuals, temples, or private organizations having outstanding heritage objects in their collection which are getting decayed for want of conservation as they cannot afford cost of their conservation. Unless a mechanism is developed for subsidizing the conservation of such objects, the country may loose for good many such objects which will perish for want of conservation.

6. CONCLUSION: Thus we can conclude, that the Conservation Studies in India are still in infancy and need to be developed further considerably as in U.K., U.S., former U.S.S.R., Japan and Scandenavian countries etc. Simultaneously efforts have to be made to create full awareness in the minds of planners, political bosses, administrators and museum directors to ensure allocation of adequate funds for regular conservation, and preventive conservation of heritage property, which is the pride of India, so as to preserve it for future generations and to make it available for the world to see in good condition. Then only the purpose of developing conservation studies will be served otherwise we will only be creating a large number of unemployed conservators by developing Conservation Studies.

**"TRANSFER AND CONSERVATION OF FRESCO PAINTING
AT DOON SCHOOL, DEHRADUN"**

by Ashok Kumar Upadhyay

Senior Conservator

INTACH ICI, Lucknow.

INTRODUCTION

The Doon School located at Dehradun is one of the highly esteemed educational institutions of India. It was founded in 1935 by the eminent Barrister Mr. Satish Ranjan Das. The school was housed in the building vacated by Imperial Forest College and Research Institute in Chandbagh, Dehradun. Subsequently as the Doon School developed, a number of ancillary buildings were constructed, in the campus to compliment the main building. One such building housing the Art School was located in close vicinity of the main building.

On one of the walls of the main hall, in Art School building 5 beautiful mural panels had been made in 1940s by Sri Sudhir Khastgir in total area of 42 feet x 6 feet. The murals were made at a height of 12 feet from the floor and went almost upto the ceiling which was about 18 feet high.

WHY TRANSFER OF MURAL WAS REQUIRED

As the old building of art school had become unsafe after getting damaged in an earthquake, it was decided to be pulled down in 2005. The authorities of Doon School however wanted to save the murals by Khastgir as they had acquired historical importance as an art heritage.

The authorities therefore approached the Director General, INTACH Indian Council of Conservation Institutes Lucknow to help them out in this regard. I was deputed by D.G. in January 2005, to examine the murals and prepare a detailed report, regarding the feasibility of removing the 5 panels from the Hall of Art School and re-implanting them on a desired new wall after it has been constructed alongwith an estimate of cost and time required for the project. I thoroughly examined the fresco murals and found that the condition of the murals which were more than 50 years old was bad as the paint layer was peeling off with lime plaster layer due to salt efflorescence. But with proper

TRANSFER AND CONSERVATION OF BOOKS

AT DOON SCHOOL, MUMBAI

By Mrs. J. K. Datta

Principal, Doon School

Mumbai, India

INTRODUCTION

The Doon School is one of the oldest educational institutions of India. It was founded in 1912 by the late Mr. J. K. Datta, a pioneer of modern education in India. The school was founded in the building which was later used as a library and is now a part of the Doon School. The Doon School developed a number of libraries and was one of the first to introduce the concept of a library in India. The school was founded in the building which was later used as a library and is now a part of the Doon School. The Doon School developed a number of libraries and was one of the first to introduce the concept of a library in India.

One of the aims of the school is to provide a good library for the students. The school has a number of libraries and is one of the first to introduce the concept of a library in India. The school was founded in the building which was later used as a library and is now a part of the Doon School. The Doon School developed a number of libraries and was one of the first to introduce the concept of a library in India.

WHY TRANSFER OF BOOKS WAS NECESSARY

As the old building of the school had become very old and was in a bad state of repair, it was decided to transfer the books to a new building. The school was founded in the building which was later used as a library and is now a part of the Doon School. The Doon School developed a number of libraries and was one of the first to introduce the concept of a library in India.

The authorities therefore decided to transfer the books to a new building. The school was founded in the building which was later used as a library and is now a part of the Doon School. The Doon School developed a number of libraries and was one of the first to introduce the concept of a library in India. The school was founded in the building which was later used as a library and is now a part of the Doon School. The Doon School developed a number of libraries and was one of the first to introduce the concept of a library in India.

protection of mural and careful handling they could be removed piece by piece and re-implanted.

STAGES OF TRANSFER OF THE MURAL

The transfer of mural from the original wall in the Art School to the new walls of the new building of Art School involved the following stages.

STUDY AND EXAMINATION

Proper study and examination of the old murals. It was found that murals had been made on 12 to 15 mm thick lower cement plaster layer over which a 2.00 mm thick lime plaster layer had been paid.

DEVISING STRATEGY

Devising a strategy for its removal, storage and reimplantation on new wall.

CONSOLIDATION

Consolidating the paint layer in old building to check damage to original painting during transfer.

SECURING MURALS

Securing the original painting by application of facing cloth.

DOCUMENTATION AND MARKING QUADRANGLES

Very carefully cutting mechanically with sharp chisels the paint layer alongwith lime and cement plasters along the marked lines and removing the quadrangles with plaster layers by separating them from the walls.

CUTTING THE CLOTH APPLIED OVER THE PAINTING

Cutting the cloth facing with sharp cutter along the marked lines.

CUTTING OUT QUADRANGLES

Very carefully cutting mechanically with sharp chisels the paint layer alongwith lime and cement plaster layers along the marked lines and removing the quadrangles with plaster layers by separating them from the walls.

MAKING THICKNESS OF THE CUT OUT PIECES UNIFORM

Cleaning the back portion of removed quadrangular pieces and making their thickness uniform by the cement plaster. This process also gave strength to cut out pieces.

STAGES OF THE PROCESS OF THE MINERAL
The process of mineral formation is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

STUDY OF THE MINERAL
The study of the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

DEVELOPMENT OF THE MINERAL
The development of the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

CONCLUSION
The conclusion of the study is that the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

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CONCLUSION AND RECOMMENDATIONS
The conclusion of the study is that the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

CUTTING THE MINERAL INTO SLICES
The cutting of the mineral into slices is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

CUTTING OUT OF THE MINERAL
The cutting out of the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

MAKING THICKNESS OF THE MINERAL
The making of the thickness of the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

CONCLUSION
The conclusion of the study is that the mineral is a complex one, involving a number of stages. The first stage is the formation of the mineral from its constituent elements. This is followed by the growth of the mineral into a crystal. The final stage is the formation of the mineral into a rock.

STORAGE

Proper safe storage for the period till the new wall was available. It actually took years.

REIMPLANTATION

Reimplanting properly and securely on the new wall the cut out pieces of the mural one by one with the help of documented drawings of original in the recess made on the wall.

REINTEGRATION

Filling up the lacunae in joints where required and then reintegrating the joints with adjoining area to make the joints imperceptible.

CONSERVATION AND RESTORATION

Proper conservation and restoration of the transferred mural.

PROTECTIVE COATING

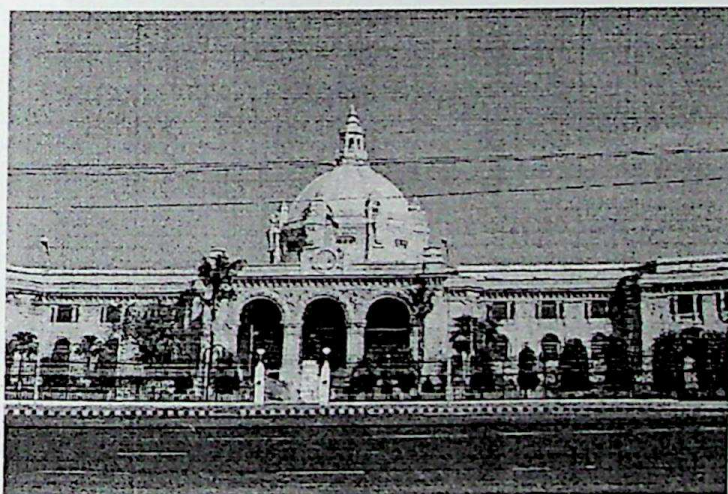
Application of a protective layer over the entire transplanted mural.

CONSERVATION OF HISTORIC OIL PAINTING AND A WOODEN MODEL OF VIDHAN BHAWAN, LUCKNOW

By Ashutosh Bajpai

Conservator INTACH ICI, Lucknow.

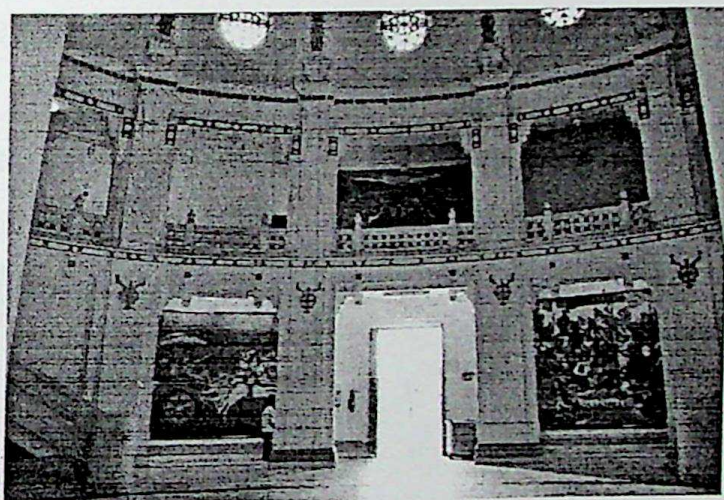
1. INTRODUCTION: There are some beautiful large sized Oil paintings of historical importance in the main Hall and passage ways on the ground floor of the majestic Vidhan Bhawan Building at Lucknow. The foundation stone of the building was laid down in 1922.



Front view of Vidhan Bhawan Building

Seven large sized paintings embellishing the walls of Vidhan Bhawan have actually been made on hard boards in the case of six murals while only one by Sri R.S.Bisht, former Principal, Arts College is on canvas. These paintings have been then fixed on the walls and provided a border of decorative wooden frame. These paintings were perhaps made in different years by different painters. There is also a large sized model of the Vidhan Bhawan building, which is on display in the entrance hall, right in front of the main entrance to the building from its imposing large portico. This model has been kept in a glass case.

With the passage of time, the oil paintings as also the model had deteriorated due to deposit of dust and dirt, and effect of humidity, light and temperature. As there is no barrier in front of the painting, they get touched by people passing by their side which also contributes to its damage. Some portions in a painting on hard board had even been lost. These paintings had thus become dim and their aesthetic appeal had got considerably reduced. The finer details in the paintings were not even visible.



*A view of the paintings at Vidhan Bhawan, Lucknow,
also showing main entrance door.*

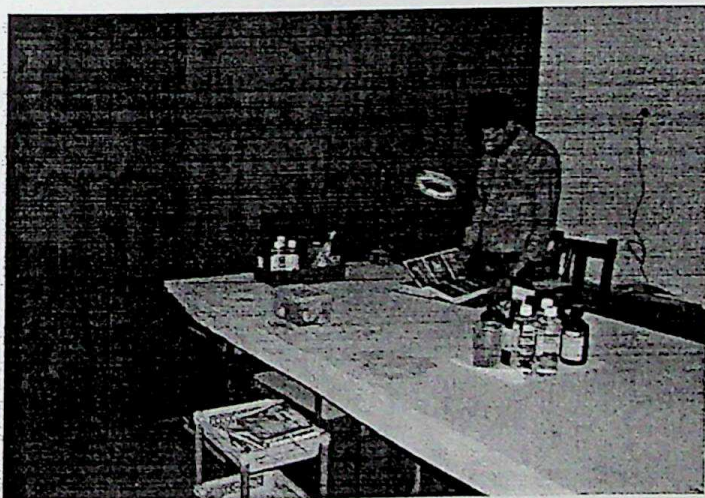
Thus these oil paintings and the model had lost their original aesthetic appeal and were no longer worthy of display in an important building like Vidhan Bhawan of the large State of Uttar Pradesh.

2. REQUEST FOR CONSERVATION: The Suptdg. Engineer Maintenance Division No.1. (Civil) of P.W.D., who maintains Vidhan Bhawan, realizing the need for conservation of the murals and the model approached the Director INTACH Indian Conservation Institute, Lucknow in April 2009, and requested for getting them examined and recommend conservation treatment required.

3. REPORT ON CONSERVATION STATUS: A detailed report giving the conservation status and treatment required for conserving and restoring the paintings and models was furnished alongwith an estimate of cost and time by Mrs.Mamta Mishra, Director, ICI, Lucknow on 18 May 2009.

After some correspondence final approval of our proposal was however received in December 2009, and the conservation work was taken up by ICI at site from January 2010.

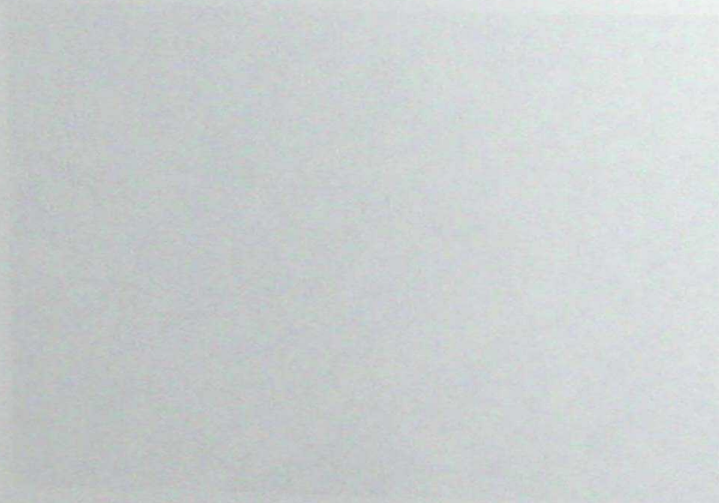
4. SETTING UP OF SITE LABORATORY: The INTACH ICI first set up a site laboratory in Room No.64 provided by the authorities in Vidhan Bhawan itself. All the conservation work was carried out at site only.



*View of a temporary laboratory set up at Vidhan Bhawan
Room No. 64.*

5. DOCUMENTATION AND ACTUAL CONSERVATION: Before starting actual conservation treatment, detailed documentation of every paintings was carried out graphically and photographically. A team of three experts viz. Sri D.N.Srivastava, Senior Conservator, Mr.Ashutosh Bajpai, Conservator supporting team of ICI were deputed to undertake this conservation work at site.

A REPORT ON CONSERVATION STATUS. A detailed report giving
the conservation status and reasons thereof of the following
species of plants and animals was prepared by the
of the Government of India, Ministry of Environment and Forests,
New Delhi, in the year 1982.
The following conservation status of the species was
determined in the year 1982 and the conservation work was
started up to the year 1982.
A. STATUS OF THE SPECIES. The species is listed
as a rare species of the country and the conservation work
shown in the following table.



There is a large number of species of the country.
The following table gives the conservation status of the
species of the country.
B. DOCUMENTATION AND RECORDS. The following
table gives the conservation status of the species of the
country and the conservation work done in the year 1982.
The following table gives the conservation status of the
species of the country and the conservation work done in the
year 1982.

6. METHODOLOGY OF CONSERVATION: After documentation micro samples of paint from each painting were analyzed. After carefully studying the problems, a strategy for conservation treatment was decided in consultation with the Director, ICI and Director General, Indian Council of Conservation Institutes. All efforts were made to maintain the originality of paintings, and to ensure that whatever treatment is given should be reversible. As the paintings were too large and there was some risk of its getting damaged in removal and refixing, the conservation treatment was carried out in situ, by the conservators using scaffolding and platform ladders, though it meant much more strain and labour than doing it on a work table.

The problems that were found in the paintings were generally as follows:-

Conservation Status

1. Accumulation of dust and dirt present.
2. Colour fading in the paint layer.
3. Darkening of the image due to yellowing of old varnish.
4. Warping in the hard board.
5. Missing area and holes present.
6. Various stains (lime wash stains) present on the surface.
7. Scratches on the surface.

Actual Conservation Treatment

1. Removal of dust and dirt deposition by soft brush.
2. Removal of varnish layer with suitable solvent.
3. Solvent cleaning by suitable solvents.
4. Flattening of painting by pressing warped areas.
5. Restoring missing area with matching material.
6. Retoning of missing area.
7. Application of anti fungal and insecticidal treatment.
8. Preservative coating of good varnish.
9. Cleaning of frame.

10. Finally varnish application on frame.

Description of condition and treatment given to A Wooden Model of Vidhan Bhawan. Size-245 x 215 x 150 cm.

Conservation Status

1. Accumulation of dust and dirt present.
2. Broken and missing area present.
3. Various stains on the surface.
4. Yellowing of varnish layer and trees are located.
5. Sagging of glass sheet on top due to the distance between the supports in two sides being too much for the glass of about 4 mm thickness.

Actual Conservation Treatment

1. Removal of glass case, by removing the top glass sheet.
2. Removal of dust and dirt deposition on the model by soft brush.
3. Solvent cleaning by suitable solvents for removal of stains on the surface.
4. Joining of broken pieces of model by epoxy resin/ P.V.A. emulsion.
5. Application of anti fungal and insecticidal solution on the surface.
6. Provided extra support of 4 mm Perspex strips vertically in the middle to support top glass sheet and check its sagging.
7. Restored the green colour on the trees and surrounding green area shown around Vidhan Bhawan building in the model.

7. SUPERVISION: Overall supervision and guidance to the conservation team was provided by Dr.O.P.Agrawal, Director General, ICCI and Mrs.Mamta Mishra, Director, ICI, Lucknow. Mrs.Mishra supervised the work throughout by making frequent visits to the site.

8. CONCLUSION: After hard work of about 5 months by conservators of INTACH ICI, Lucknow, all the murals their bordering frames, and the wooden model of Vidhan Bhawan have been properly conserved, cleaned and restored to the pristine glory by the end of May 2010. The historic works of art have received a new lease of life as the weakened

paint layer in paintings has been strengthened by consolidation. The missing portion in the painting has been reconstructed with matching material and imperceptibly fixed on to the painting from behind.

9. NEED FOR PROPER MAINTENANCE: Proper maintenance and regular preventive conservation for paintings and the model is very necessary to keep them in proper condition worthy of display and for preserving them as a heritage for posterity.

point level in painting has been considered in connection with the
master's control in the painting and the artist's freedom in the
subject and composition. It is only the painting which is
a work for proper maintenance. The artist's freedom is
not the same as the master's control. The artist's freedom is
not the same as the master's control. The artist's freedom is
not the same as the master's control.

**CONSERVATION OF RARE PAPER MANUSCRIPT AND A LARGE
PAPER SCROLL AT HAZRAT PIR MOHAMMAD SHAH LIBRARY
AND RESEARCH CENTRE, AHMEDABAD, GUJARAT**

**By Surendra Singh, Conservator,
INTACH ICI, Lucknow.**

DURATION OF PROJECT: 16.04.2010 TO 15.06.2010.

SUPPORTED BY MICRO INK LTD. GUJRAT.

INTRODUCTION: Hazrat Pir Mohammad Shah Library and Research Centre is world famous library and holy place of Pir Mohammad Shah Dargah. Scholars come here to study from world over. The Library has a very rich collection of 3000 rare paper manuscripts, 6000 rare printed books and dress of Hazrat Pir Mohammad Shah etc.

TYPE OF OBJECT: Persian, Arabic and Urdu paper manuscript.

ESTABLISHMENT OF A TEMPORARY LABORATORY: The project was for 2 months so I had to establish a temporary laboratory in Library.

TOTAL CONSERVED OBJECTS: Total 27 manuscripts out of which 20 manuscripts are in loose form, 6 manuscripts are in binded form and 1 large precious scroll 3.5 meter long titled "The Quran in the first Surah of Quran" which is written in micro sized words.

GENERAL STATUS OF MANUSCRIPT

- Covered with dust and dirt.
- Insect excreta in powder form present.
- Insecticidal powder is visible.
- Insect eaten (termite and bookworm).
- Old repair in form of full lining by butter paper, dark brown adhesive (unscientifically) used to line the butter paper.
- Fungus spores present.

CONSERVATION OF RARE PAPER MANUSCRIPTS AND A LARGELY
PARTIAL AT HAZRATGANJ LIBRARY
RESEARCH CENTRE, LUCKNOW

By Dr. S. K. Singh
Principal, Hazratganj Library

DATE OF PROJECT: 15.12.2010

SUPPORTED BY: MITHI DAX LTD. GAZIABAD

INTRODUCTION: Hazratganj Library is situated in the heart of the city of Lucknow. It is one of the largest libraries in the city and has a rich collection of rare paper manuscripts. The library has been established in the year 1950 and has since then been working for the preservation and conservation of its valuable collection.

TYPE OF PROJECT: RARE PAPER MANUSCRIPTS

ESTABLISHMENT OF A LIBRARY: The library was established in the year 1950 and has since then been working for the preservation and conservation of its valuable collection.

TOTAL COLLECTION: The library has a total collection of 10,000 volumes. It includes a large number of rare paper manuscripts, which are of great value to the scholars and researchers.

GENERAL STATUS OF MANUSCRIPTS

- Good and well preserved
- Some are in poor condition
- Some are in very poor condition
- Some are in fair condition
- Some are in bad condition
- Some are in very bad condition
- Some are in poor condition
- Some are in very poor condition

-2-

- Charring effect in some manuscripts.
- Manuscript has become brownish.
- Fold impression and tears present.
- Spine totally damaged by insect.
- Previous restoration done by an untrained binder by using the step stitching method and Rexene binding. Some written matter was also lost due to carelessness while cutting the edges.
- Very light acidity present.

LABORATORY EXAMINATION

- First the pH value was checked then checked the solubility of ink in water and alcohol.
- Checked the old repair adhesive was tested for easy removal.

ACTUAL CONSERVATION

- Mechanical cleaning, dusting and removal of dust, insect excreta and insecticidal powder by soft brush.
- Pagination was done.
- Removal of step stitching and Rexene binding.
- Fungicide application-0.1%.
- Removed old repair and brown adhesive also.
- Cleaning in water + methanol.
- Resizing with 0/2% gelatin.
- On one side full lining was done and insect holes were filled from the other side. Gluten free starch paste was used as an adhesive.
- Trimming and serial.
- Section stitching and archival binding was done using fresh handmade paper end sheet. New hand made cover board and full binding with green cloth + hand made paper both pasted together was done.

-3-

1. Special treatment given to the manuscripts in loose form.
2. For loose manuscripts they were first put in between two handmade boards and then wrapped in hand made paper then finally in vesthan cloth.
3. The conserved Quran scroll was kept in a rolled form using a PVC pipe.

SPECIAL THANKS TO

Professor Bombaywala, Director, Pir Mohammad Shah Library, Ahmedabad and the entire supporting staff of Pir Mohammad Shah Library, Ahmedabad.

OVERALL DIRECTION

Dr.O.P.Agrawal, Director General, INTACH ICCI, and Smt. Mamta Mishra, Director, INTACH ICI, Lucknow & Mr.Ashok Kumar Pandey, Senior Scientist, INTACH ICI, Lucknow.

Recent developments in conservation of paper & photographs.

Amita Soni Tongaria, Paper Conservator, INTACH, Art conservation center, Delhi

1. Introduction

The world of paper conservation has changed and developed in many ways, over the last few years. The conservation profession and its related groups have expanded, there are more meetings, symposia, publications, collaborative projects as well as electronic communication; this has led to an ever-increasing spread of knowledge at all levels. This article is based on my own observations and experience and presents an overview of my internship programme in paper and photograph conservation at Victoria & Albert museum and British Library, London with the support of Charles Wallace India Trust (CWIT).



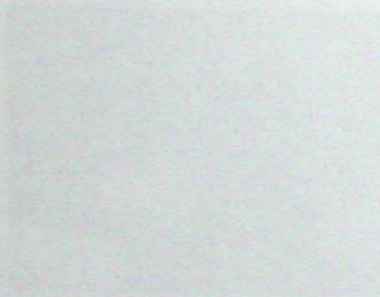
Examination under microscope

1.1 Variety of Tools, Equipments with Effective Techniques and Methodology

Technical examination and analysis of works of art, cleaning and structural conservation treatments on paper, photographs, as well as planning and executing preventive conservation of art objects are some of the usual functions of these conservation studios. Some of the important facilities like table mounted stereomicroscope with flexible fiber optic light source and digital camera, Ultra violet light, health and safety protective equipments, mount cutting machine, etc are of primary importance and basic infrastructure required for conservation.

I also learned to use tools and techniques which were really new to me, like use of Japanese and Chinese brushes, Japanese infrastructure and materials like different kinds of Japanese paper, tools and equipments such as Japanese horse hair strainer made from Insect proof cedar wood, different kind of brushes like pounding and water cut brush, Paste applying brush, joining brush, squeezing brush, I also got opportunities of enhancing my skills in graphic and photographic documentation, dry cleaning with chemical sponge, aqueous cleaning with water and organic solvents, deacidification with alkaline solution,

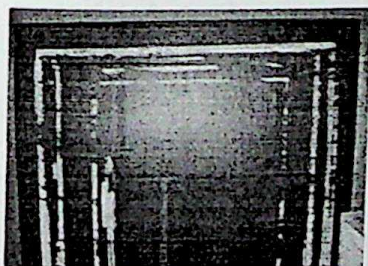
Recent developments in the history of the Indian subcontinent have been the subject of a number of recent publications. The most notable of these is the book by Dr. R. S. Sharma, 'The History of the Indian Subcontinent', which is a comprehensive survey of the history of the region from the earliest times to the present day. This book is a valuable addition to the literature on the history of the Indian subcontinent and is highly recommended for all those interested in the subject.



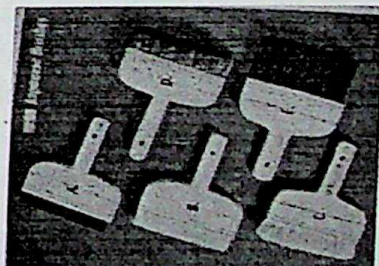
The history of the Indian subcontinent is a complex and fascinating subject, one that has attracted the attention of scholars and writers for centuries. The region has been the site of some of the most important civilizations in the world, and its history is a testament to the resilience and creativity of the human spirit. The book by Dr. R. S. Sharma is a masterpiece of scholarship, one that provides a comprehensive and accessible overview of the history of the Indian subcontinent. It is a book that is essential reading for all those who wish to understand the history of the region and the people who have lived there.

tear-patch mending, Japanese lining methods with Zin Shofu Japanese starch paste, and making imitation of Karibari board.

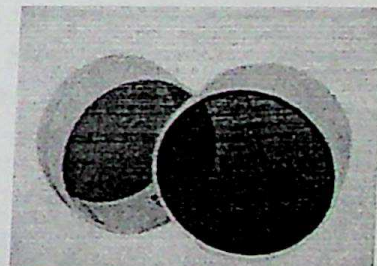
Karibari board is the traditional light weight panel used to flatten the object of paper and silk. It is covered with seven layers of Japanese paper like hosokawa, shekishu, minogami with starch paste as an adhesive. After the final layer of paper has dried the entire surface of drying board is coated with water proof juice of green percimen. These aspects of the karibari construction make it a very practical and invaluable piece of equipment; it is strong, light weight and can be moved easily. It can be of dimensions as large as is required and is very stable. Karibari can be joined together with length of wood screwed along the top and bottom of the board to make larger drying boards when required, the vertical joints can be prepared over to create a more even drying surface. The surface of the board is suited to its purpose and is smooth and seamless. Large delicate objects undergoing treatment can be safely stored away on the board until the next stage of the treatment. Moisture evaporates through the back of the object as well as front, resulting in more even drying. Objects dry evenly, are protected against fluctuating temperatures and are easy to mount and remove.



Karibari Board

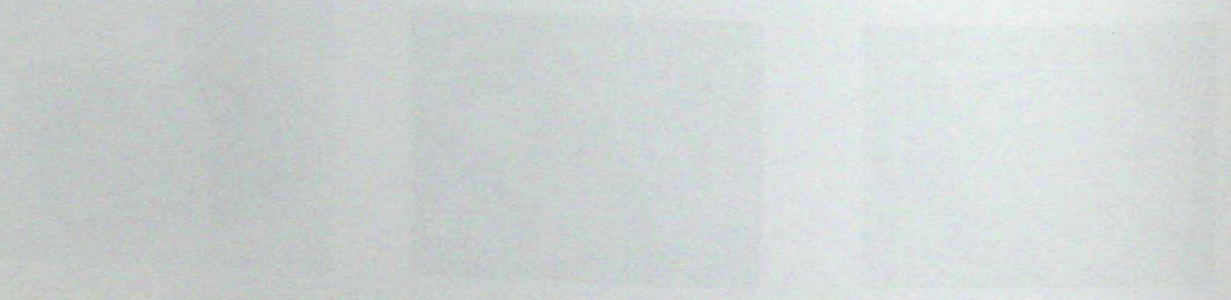


Japanese Brushes and strainer



During my internship, I got the opportunity to work on various conservation assignments. These assignments included Miniatures, French posters, graphite's and water color drawings, map, engraving, prints and a water color drawings related to "Indian life and landscape". I learned and also discussed about the common problems encountered in photographic collections like the layer structure of photograph, common conservation problems found in photographic images such as chemical deterioration like oxidation of silver images, deterioration of supports, yellowing of Albumen, Biological deterioration like growth of Fungi, Bacteria, Insect damage, Physical deterioration like sticking of gelatin to enclosures, change in size and shapes and about cold storage, different types of negatives like glass, nitrate, acetate, polyester identifying, types of photographs with microscope and spot testing. We discussed the layer structure and tested to determine if albumen, gelatin or collodion binder layer were present, and identify photochemical prints, preventive and

The first part of the book is devoted to a general survey of the history of the subject. It begins with a discussion of the early theories of the origin of life, and then proceeds to a consideration of the more recent theories. The author then discusses the various theories of the origin of the human race, and finally comes to the conclusion that the human race is descended from a common ancestor.



The second part of the book is devoted to a detailed consideration of the various theories of the origin of life. It begins with a discussion of the early theories, and then proceeds to a consideration of the more recent theories. The author then discusses the various theories of the origin of the human race, and finally comes to the conclusion that the human race is descended from a common ancestor.

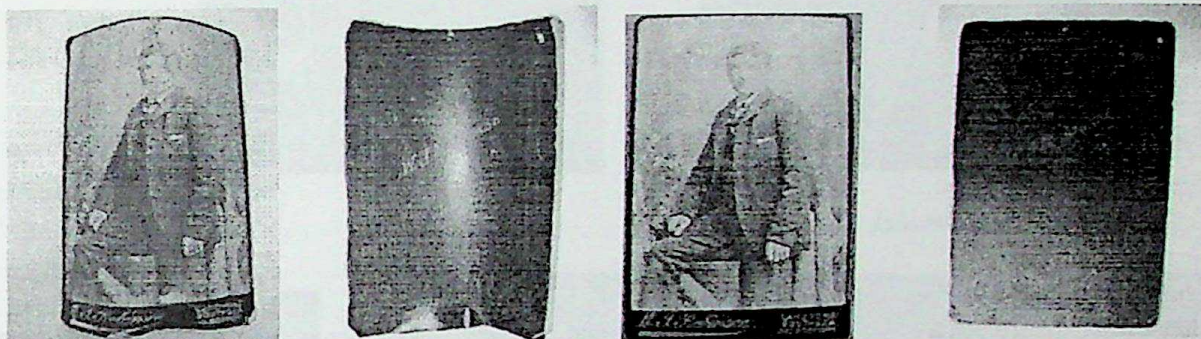
Amita Soni Tongaria

Recent Developments in conservation of paper and photographs

curative conservation treatment of photograph collections with the new material like silver safe(non buffer neutral paper and mount).

Use of Gore-Tex for flattening of curved photograph and use of Silver safe

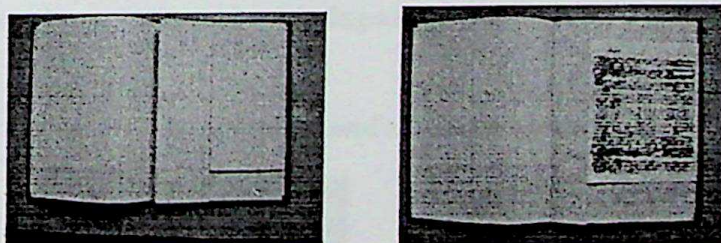
Paper for mending and repair



Before conservation

After conservation

I also learned the use of different kinds of cleaning methods with different types of cleaning material, humidification and flattening of objects with Gore-Tex material, Float and Inlay mounting, V-hinge, T-hinge, Traditional inlaying, Strip inlaying, Slot inlaying, Over throw mount, Float mount, Paper folders, corners, Fascicule (A fascicule is a single-section, pamphlet-sewn binding comprising acid free support sheets and a hooked leaf (as compensation guard) with an acid free stiff paper cover).

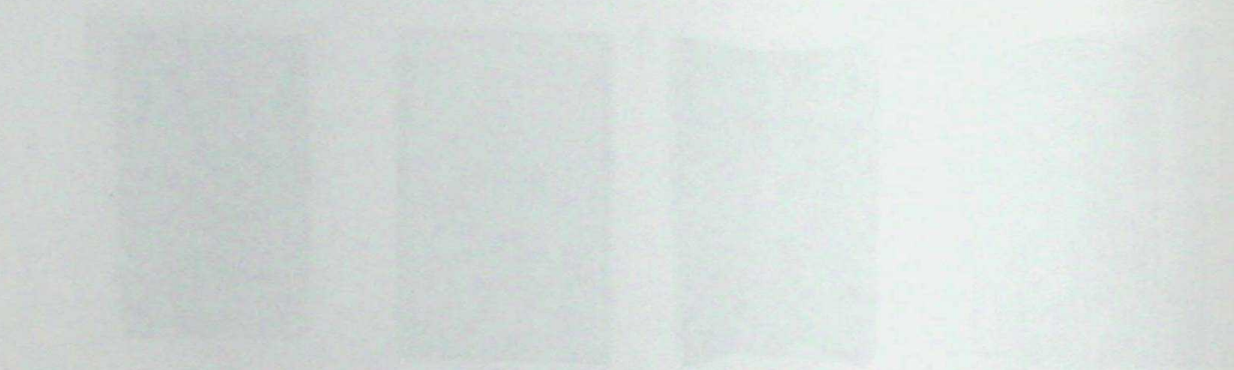


Fascicule

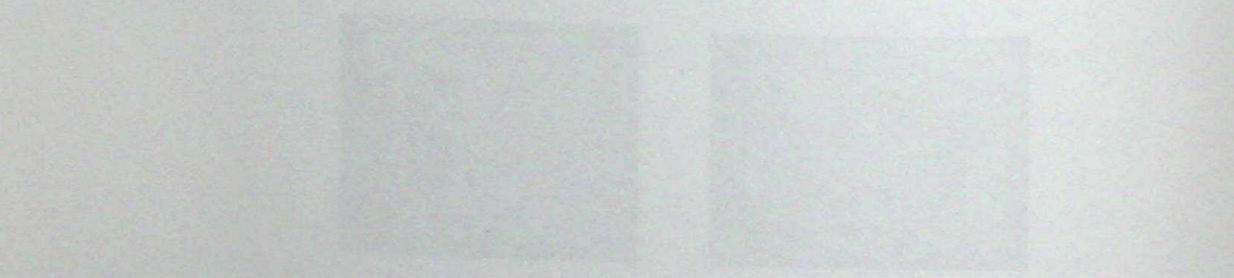
Learning about and practicing different kinds of book binding techniques like Indian Islamic and western, practicing conservation techniques such as mounting, inlaying and hinging, and learning about archival box making technique were rewarding as well as enriching experiences.

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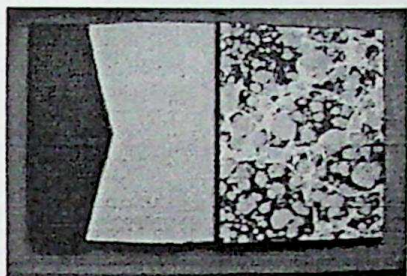
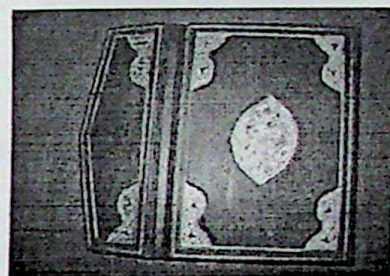
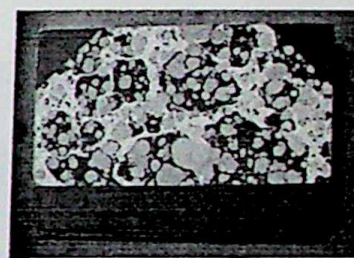
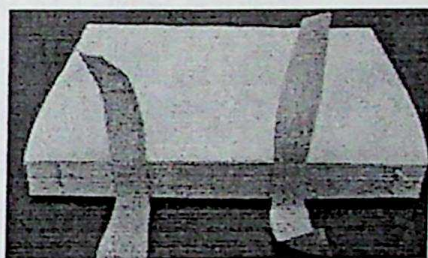
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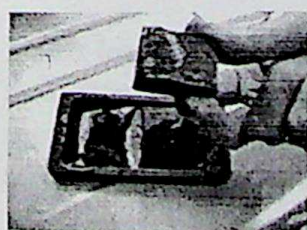
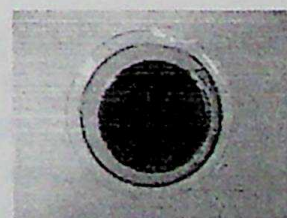
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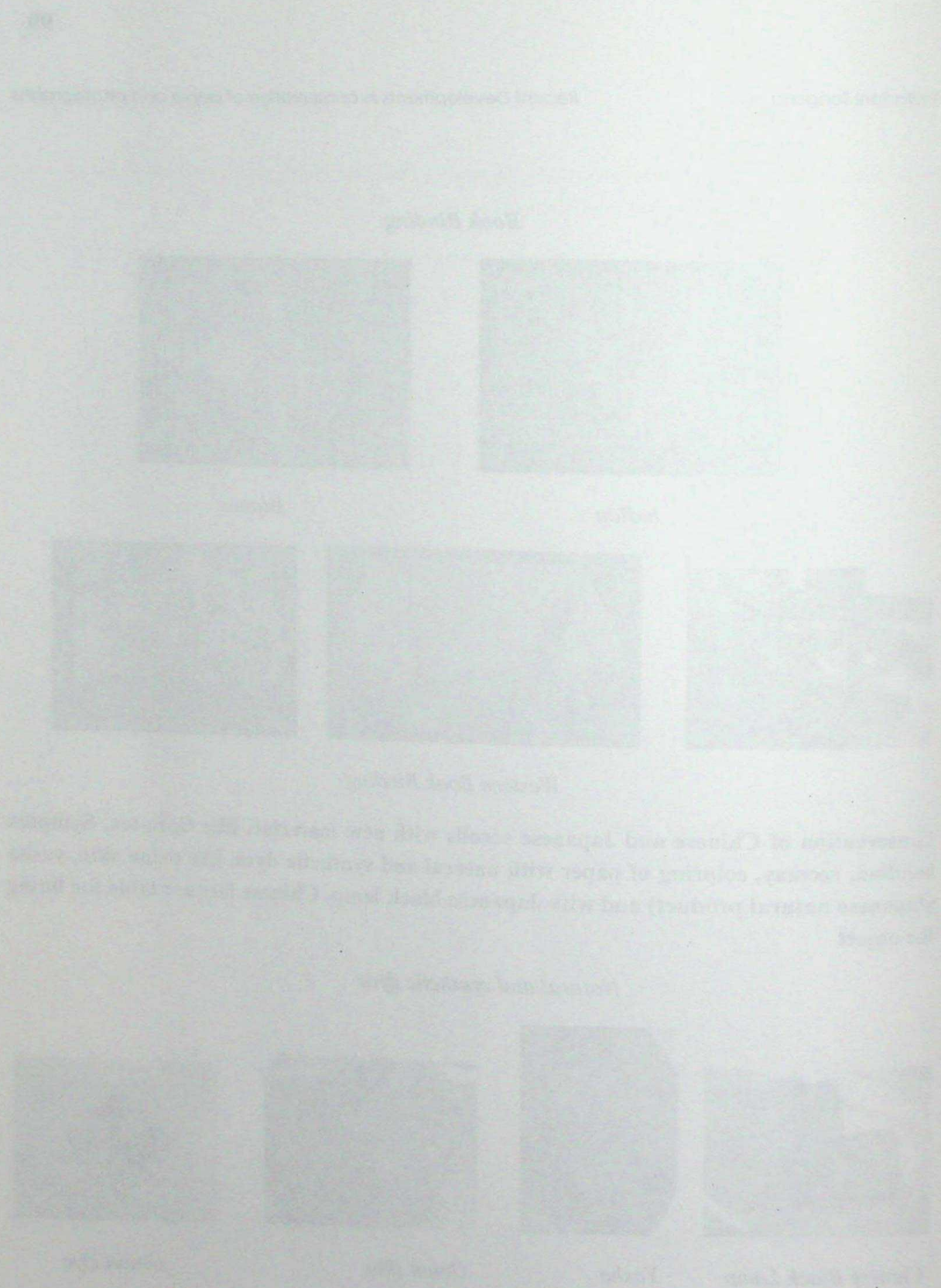
Amita Soni Tongaria

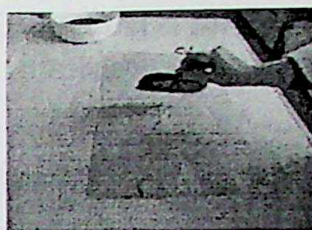
Recent Developments in conservation of paper and photographs

Book Binding*Indian**Islamic**Western Book Binding*

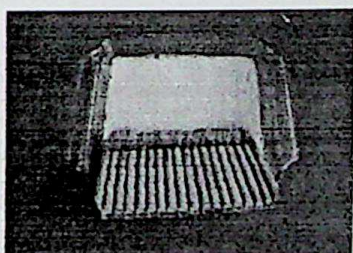
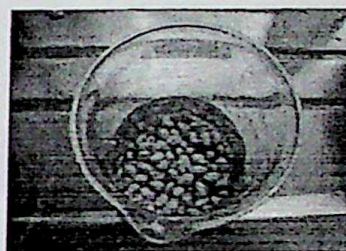
Conservation of Chinese and Japanese scrolls with new materials like Gore-tex, Symptex bondina, reemay, coloring of paper with natural and synthetic dyes, like onion skin, yasha (Japanese natural product) and with Japanese black lamp, Chinese lacquer table for lining the object

Natural and synthetic dyes*Chinese Black Lamp**Yasha**Onion skin**Onion Dye*



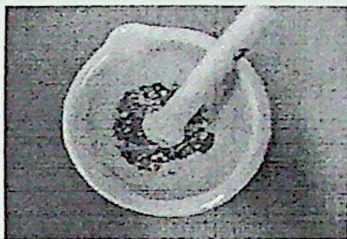
*Cartisol synthetic dyes**Method of paper dyeing*

In Chinese scroll painting, for lining and patch mending mostly they used xuan paper xuan paper has a short fiber and less strength and its difficult to use at the time of handling, so earlier, they used alum and glue as a sizing material but alum makes paper acidic so instead of using alum they are using natural Soya beans milk, they soaked beans overnight and grind like a milk and use as a sizing material.

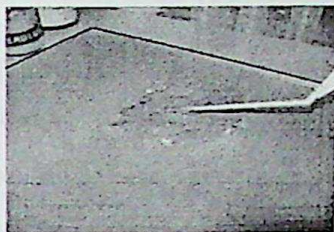
*Sizing of Paper with natural material*

I also learned different kinds of consolidation techniques for flaking paint with nebulizer and ultrasonic mister with different kinds of consolidating agents like funori, klucel-G, methyl cellulose, isinglass, Aqua zol -50, EHEC (Ethyl Hydroxy ethyl Cellulose) etc. A small air pressure nebulizer and ultrasonic mister used to administer antibiotics in solution to patients, was used to deliver a mist of a chosen consolidant solution to an object within a humidity chamber from its hose attachment. A very fine mist, with 65% of the moisture droplets below 5 microns in size, can be applied gradually to the object with the intention of causing fewer disturbances to loose particles than a brush or spray application and with little or no color change. Consolidants of different concentrations were tested, including methyl cellulose and gelatin or funori and EhEc in propanol. I prepared a sample of pigments in the traditional way with dry powder pigments with lead white, zinc oxide,

titanium white, Azurite etc, use of animal glue and Iron ox gall for increasing the wetting and flow of water and for making sample on Indian hand made paper and for consolidating the flaked pigment with nebulizer.



Grinding of color (Verdigris)



Mixing of pigment with animal glue and iron ox gall



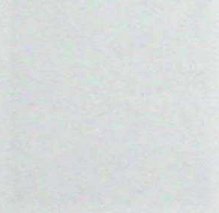
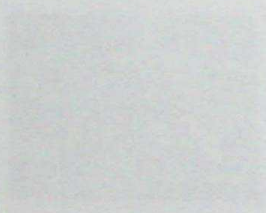
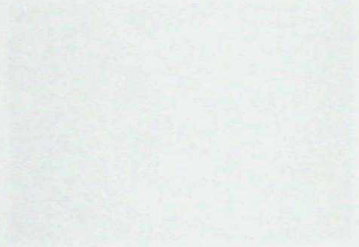
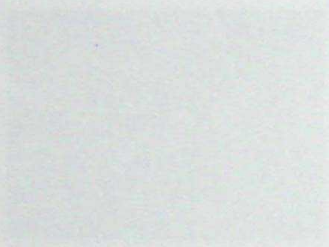
Consolidation with nebulizer

Removal of glue with mini steamed vacuum and flattening, patch mending, retouching and mounting technique and Devising an appropriate mounting system to allow both recto and verso to be easily studied and knowledge of mineral and natural pigments. I learned and prepared an enclosure for paper objects storage using Mylar film with ultrasound sealing process, according to appropriate size and shape. Such type of an enclosure is very effective for proper storage as well as to stop further physical loss.



Encapsulation

I also learn, Use of gore-tex method for flattening, humidification and in reversion of blackening of Pigments and bleaching process. This is an alternative approach is to apply hydrogen peroxide as a vapor via Gore-tex (Gore-Tex is a waterproof/breathable fabric made of a membranes of expended polytetrafluoroethylene (PTFE) laminated to a non woven polyester backing. The gore-tex method does not carry the risk of disturbing the



paint layer like brush and is also less toxic as ether is no longer required. A piece of malinex sheet, with hole cut at the appropriate place controls the area where hydrogen peroxide vapors will act. However, since the miniature is placed face down, care must be taken to check the object at regular intervals. It should be added that bleaching (use of hydrogen peroxide) should only be considered where the conservator feels that there is no risk to other pigments and using of gore -tex for reversion of blackening of pigments is very helpful from the health and safety point of view of the conservator as well as of the art

Humidification and flattening of objects with Gore-Tex

Diagram of a Gore-Tex Laminate Stack

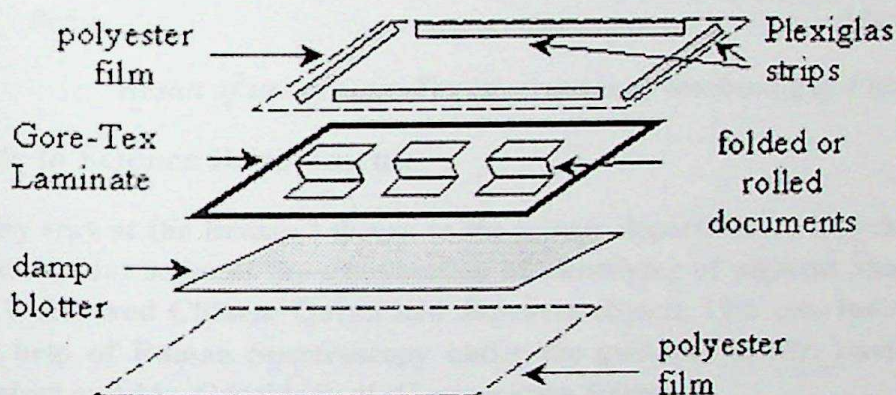
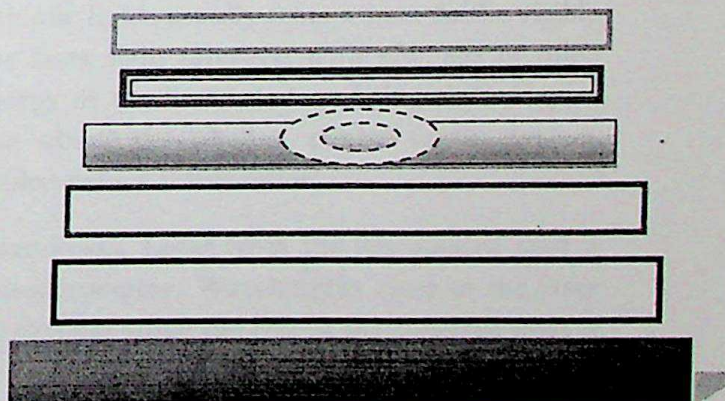
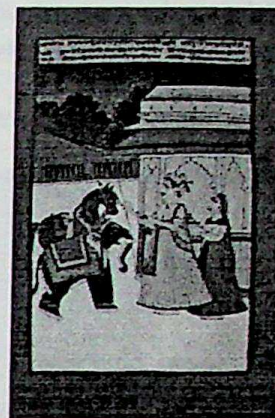
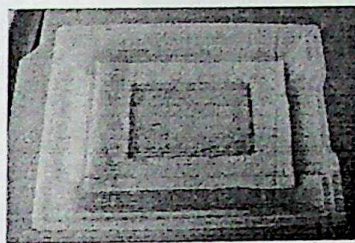


Diagram of the use of Gore-Tex in reversion of blackening of Pigments

6. Plastic
5. Miniature
4. Bubble sheet with accurate hole
3. Gore-Tex
2. Damped blotter with solution
1. Support



*Before**After**Result of use of Gore-Tex in reversion of blackening of Pigments*

1.2 Visits to Science Department:

During my stay at the British Library in the science department, I had the opportunity to see and carry out some of the examination of identifying of pigment analysis of the 18th century. I observed Chinese Quran and Japanese objects, 19th cen. Indian ivory objects, with the help of Raman Spectroscopy under the guidance of Mr. David Jacob (Senior Conservator) and Mr. Garside Paul (Conservation Scientist).

Raman spectroscopy, named after C.V. Raman is a spectroscopic technique used to study vibrational, rotational, and other low-frequency modes in a system. It relies on inelastic scattering, or Raman scattering of monochromatic light, usually from a laser in the visible, near infrared, or near ultraviolet range. The laser light interacts with phonons or other excitations in the system, resulting in the energy of the laser photons being shifted up or down. The shift in energy gives information about the phonon modes in the system. Infrared spectroscopy yields similar, but complementary information.

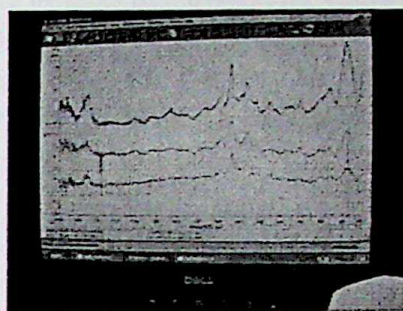
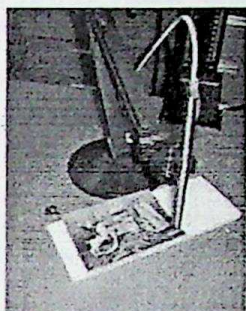
Typically, a sample is illuminated with a laser beam. Light from the illuminated spot is collected with a lens and sent through a monochromator. Wavelengths close to the laser line, due to elastic Rayleigh scattering, are filtered out while the rest of the collected light is dispersed onto a detector.

This method is also useful in the identification of later alteration of pigments and through FTIR (Fourier Transform Infrared Spectroscopy) or vibration spectroscopy useful to identify the degradation of paper and identifying the type of pigment.

The non-destructive, non-invasive nature of Raman microscopy was paramount in selecting it as an analytical tool. Other advantages include the portability of the instrument,

which facilitates on site analysis and the relative speed at which the analysis can be carried out allowing a large number of readings to be taken in a short time.

Examination of Pigments in Raman Spectroscopy



Also, other discussions and examinations were carried out on miniature paintings under ultraviolet light; it was observed that the color of lead white pigment gives pink color fluorescence and zinc white as zinc has a very characteristic strong lemon yellow fluorescence and Indian yellow gives fluorescent color, previous retouching was examined and examination of the corrosion of iron gall ink with UV was also done.

As per discussion I got to know, that Through infrared light spectroscopy, we can examine the pH of paper, tensile strength, folding strength, endurance strength etc. and identify the lignin and aluminum content or inorganic components like calcium carbonate and clay or sand particles.

Discussion about identifying the age of paper by smelling the old books depends on different kinds of paper and the smell of binding cloth and of adhesive. Smell of furfural, vanillin, citric & formic acid through the decomposition of the products of cellulose hydrolysis like citric & formic acid indicates oxidation of cellulose while vanillin indicates the lignin decomposition.

Other discussions about the lamination of paper objects, laminating process which use cellulose acetate the subsequent deterioration and release of acetic acid led to the deterioration of laminated paper that was not sufficiently buffered with alkaline material, which can affect the degradation of pure cellulose paper and After sometime Lamination also become yellow darken, brittle crack and break as well as and the paste used in laminating the object to tissue and silk was also susceptible to mould and insects. They prefer sunlight bleach and that is performed in alkaline conditions, often magnesium bicarbonate or calcium hydroxide.

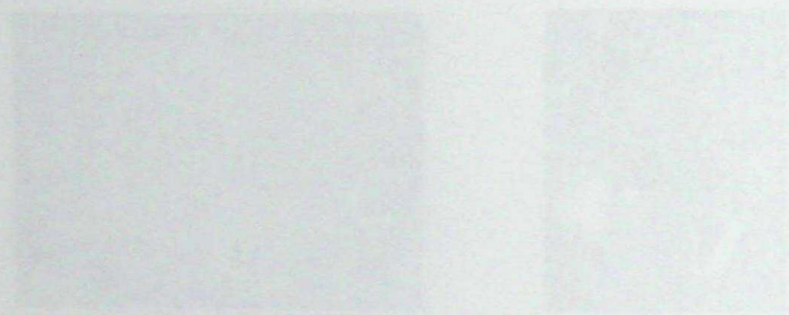
1.3 Visits to Preservation Department

During my internship at British Library I visited the preservation department where they have different sections like:

THE JOURNAL OF THE INDIAN ARCHITECTURAL SOCIETY

Vol. 1, No. 1, 1901

Published by the Indian Architectural Society, Calcutta



THE JOURNAL OF THE INDIAN ARCHITECTURAL SOCIETY

Vol. 1, No. 1, 1901

Published by the Indian Architectural Society, Calcutta

THE JOURNAL OF THE INDIAN ARCHITECTURAL SOCIETY

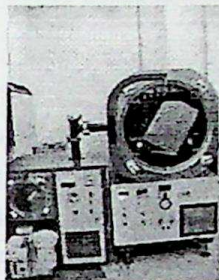
Vol. 1, No. 1, 1901

Microfilm & Cold storage, Pest Management, Digitization, Handling of books- advice for readers (handle with Care), Salvage (Emergency planning after accident with collection items)

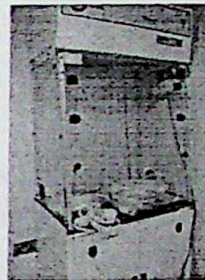
I visited the quarantine room, where all the objects are primarily checked before entering the library. There are facilities such as cold storage for freezing the active mould infected objects, a fumigation chamber, a dry rough unit for cleaning of dry, dusty and moldy documents, an air drying machine for drying freezed objects and a Velox (very low oxygen).



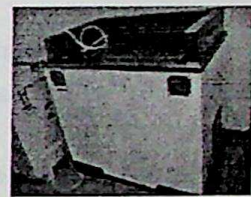
Cold Storage



Air Drying Machine



Fumigation Chamber



Dry Rough Unit

Velox (Very Low Oxygen): Many species of insects can be devastating for all kinds of archival collections in libraries and museums and may produce damage to paper, leather, and even wooden articles, such as musical instruments, frames, items of furniture and statues. In fact any object made of organic matter is vulnerable to insect attack. Therefore, it is important to eliminate such insects and prevent their proliferation to avoid irreparable attacks. Velox system has been introduced by Italian R.G.I. Research Group. This system is useful to kill the active insect infected objects, which has decoration, illuminated parchment, and highly gilded frame with glass, which we can't put in cold storage. The guiding principle is to remove insects (eggs, larvae and adults) by depriving them of oxygen. The object is placed in a transparent case where the oxygen index is reduced to 0.2%. After a period of about 20 days, all insects of any form are most likely to disappear.

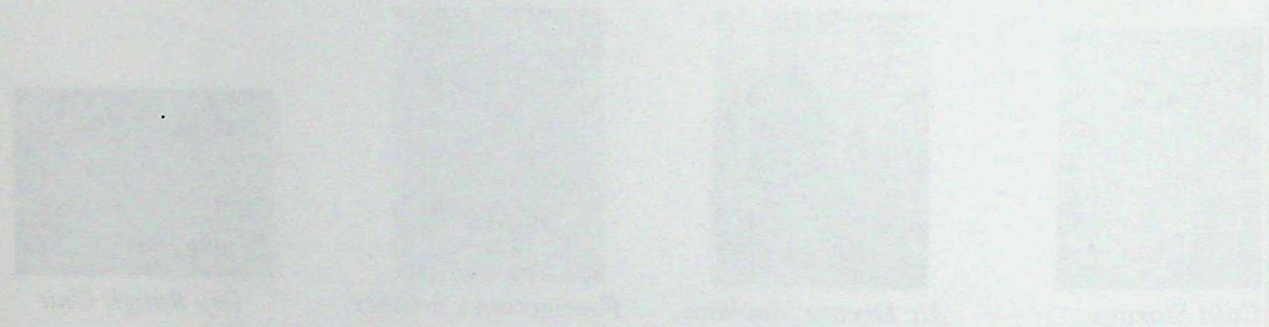
There are several advantages of the velox system which are as follows:

It is 100% reliable (for insects at any stage of life), direct treatment without the need to transfer objects, practically no maintenance of works required. Adaptable to all shapes and sizes of objects, Hazardless for both documents and materials, Hazardless for users and environment (no toxic products), Unaffected by relative humidity, easily transportable, Easy to use, No need for specialized personnel, Low cost compared to traditional methods.

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the following is a list of the names of the persons who have been mentioned in the text of the book.

1. The first name mentioned is that of the author, who is a well-known scholar in the field of history.

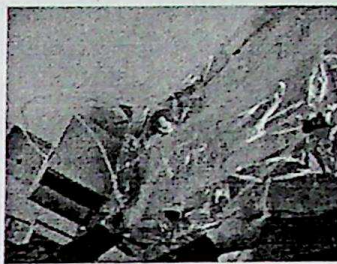


2. The second name mentioned is that of a person who has been mentioned in the text of the book. This person is also a well-known scholar in the field of history.

3. The third name mentioned is that of a person who has been mentioned in the text of the book. This person is also a well-known scholar in the field of history.



Velox system



Method of using

1.4 Conclusion

Over the course of my intensive internship programme and training, I enhanced my knowledge and learnt various advanced techniques using new materials, tools and equipments. I also got an excellent opportunity of interaction with many experienced conservators, conservation scientists, curators, art handlers, exhibition specialists and conservation technicians. My learning opportunity went further up with every visit to different conservation departments and by learning about and using their tools and different techniques of treating art objects.

The experience of working in the Paper Conservation Studio at V&A and British Library has also been a very rewarding and fulfilling one. It gave me a tremendous opportunity to be involved with the conservation process, and also gave me a little insight into the planning and the thought process that goes into mounting a large exhibition. Observing and interacting with so many skilled conservation professionals at work and being a part of the team boosted my morale to a very high level and built my confidence. I on my part tried my level best to comprehend and acquire all the sophisticated skills, techniques and the theoretical as well as the practical knowledge which, I gained during my internship programme.

Visits to Paper conservation and other conservation and science department of V&A and British Library, Tate Britain, Tate Modern, Courtauld institute, welcome nstitute, British Museum Oxford University and National Museum, Liverpool and also visit to Private conservation Studios with the guidance of Mike wheeler and David jacob.

1.5 Discussions and Interactions

1. Discussion with Mr. Alan Derbyshire (head of the paper, books and painting department, V&A) on conservation treatment of ivory miniatures.
2. Discussion with Mr. Mike Wheeler, Ms. Susan Catcher, Ms. Nicola Costaras Beth McKillop (keeper, Asian Department), Ms. Rosemary Crill (senior curator, Asian

Department, Ms. Jane Rutherford (head book conservator) (V&A), Mr. David Jacob, Mr. Mark Browne, Senior Photograph conservator (British Library), Ms. Joanna Kosek, Incharge of Eastern paper conservation department, Hiriyama Studio (British Museum), Mr. Gillian Boal (conservation and collection care manager of Wellcome Trust, Mr. Nicky Lewis (Senior paper conservator), National Museum Liverpool.

3. Discussion with Mr. Garside Paul (Conservation Scientist) British Library, on Raman Spectroscopy, Vibration spectroscopy, Fourier Transform Infra Red, detection of the ageing by smelling the old books, mass de-acidification etc.

4. Discussion with Mr. Pimlott Jane (Preservation co-coordinator) on salvage, digitization, quarantine room and velocity system.

1.6 Acknowledgement

I am grateful to the following organizations and people who contributed in making this endeavor a success:

Victoria and Albert Museum and British Library paper conservation department for allowing me to work under their guidance, The Charles Wallace Trust (CWIT) Awards and its board for selecting me and supporting me for the internship, The Indian National Trust for Art and Cultural Heritage shaping my work profile Dr. O.P. Aggarwal and Mr. Nilabh Sinha for guidance, My family members and friends in India for guiding me and supporting my efforts.

Past, Present and Future of Conservation

C.B. Gupta

The variety in religion has led to the rich cultural heritage of India. Indian tradition has been depicted in large number of Monuments, Temples, Sculptures, Paintings and other artifacts that were added time to time in the Indian treasure. But Aging and Deterioration do not spare anything in this world and our collection is no exception. In our old texts like 'Vishnu Dharmot Puran' of 4th century and 'Chintamani' of 14th century there is literary evidence of Conservation. Keeping this in mind, a need to have Conservators to protect them arose and soon a Conservation Laboratory in Lucknow named, NRLC-CP (National Research Laboratory for Conservation of Cultural Property) was set up in 1976. Asia Pacific Seminar led to the upliftment of National Museum Laboratory as it was then given the status of Central Conservation Laboratory. As per the need to have a National Research Laboratory, Department of Culture contributed to the establishment of NRLC.

In the beginning the ratio of Artifacts to Conservators was shocking as there were infinite number of Artifacts which needed protection and there were barely handful of Conservators. It was realized that the technical expertise was yet to be gained. This fact led to number of Exchange programmes with the Western countries and soon India had expert Conservators who could handle the responsibility to take care of the rich cultural wealth.

Even with the lack of equipments and funds, our team of few expert Conservators could move the approach of Conservation from Traditional to Scientific. As compared to the European countries, India still had a long way to go to achieve Scientific Expertise in the field of Conservation. By now, though we were not at par with the European countries but at the same time we cannot overlook the fact that we definitely moved ahead. This can be substantiated from the fact that now candidates from South East Asia started coming to NRLC for training in Conservation. Also trained Indian Conservators got many opportunities abroad to show their skills in Conservation. As a matter of fact, I was invited by a Private Conservation Laboratory in Hong Kong to guide them in their work. I was also offered one job at the India Stationary Office Laboratory in London for preservation of East India Company documents. Not just this, by this time the Artifacts from South East Asia also started coming to India for their Conservation and Preservation. This shows the belief in growing Conservation work in India.

To further promote the field of Conservation in India, many conservation related courses were initiated. Archaeological Survey of India established many labs in various museums and also opened one big lab in Dehradun. National Archives holds Diploma and Certificate courses to promote

knowledge in Archives Management and Preservation. DIHRM was also opened by Delhi Government to promote Cultural Studies. Now most of the State level and Private Museums have their own Conservation Laboratory. Lalit Kala Academy has got its many works preserved and hence said to have participated in the promotion of Conservation.

This was followed by a pause, a phase when Conservation did not develop any further. This phase overcame when one big project in Conservation was made. During the British reign in India many paintings were made. They were now getting damaged and deteriorated. And it was according to the wish of Late Prime Minister Mrs. Indira Gandhi that a project on Conservation and Restoration of the Non-Indian Artist's objects was launched. This project gave encouragement in terms of enthusiasm in Conservators and growth in field. For this project three centers were made in India, i.e. Delhi, Lucknow and Calcutta. I was made the Head of Lucknow Center for this project. India was divided into three zones and the respective three centers started their work with Documentation of the same. Unfortunately, this programme did not work for very long and was ceased in between.

To cater the demand of Conservation in India, an NGO named INTACH (Indian National Trust for Art and Cultural Heritage) was established by Dr. O.P. Agrawal. This now has several centers across India with each center devoted to some specialization.

To spread awareness among people and to exchange ideas, Seminars, Conferences and Presentations were promoted.

Due to efforts of Late DG Sh. L.P. Sihare, National Museum Institute of History of Art, Conservation and Museology was established. As the name suggests three courses, i.e. History of Art, Conservation and Restoration of Works of Art and Museology were introduced in this. These courses are open to both Indian and Foreign nationals.

Expertise enhancement in Conservation helped India gain such a prestige that the reputed Indian Conservators were now invited abroad to deliver lectures to share their views. I was sent to Russia as an Indian expert on Conservation.

Indian Art Objects were in great demand to be exhibited abroad. For that purpose also Conservators were to play a very important role. Their chief role was to prepare a Condition Report for the object and to make it fit for exhibition.

Coming to the present scenario, Conservation has indeed come a long way but is still not upto the mark. At the Government level, the present status of Conservation is on the declining side. But of course the awareness of Artifact Conservation is more than ever and it is for this reason that private custodians, art galleries and individuals are getting their objects preserved in best possible manner. Many students from National Museum Institute work as Freelance

Conservators and give their input in raising the work standard. INTACH is also expanding. Recently INTACH opened its brand new conservation section on Textiles called STCU (Specialized Textile Conservation Unit). With an aim to survey and preserve manuscripts in our country, NMM (National Manuscript Mission) was started.

I expect our Government should give more support to the Conservation fraternity. There are many posts in the Museums which are vacant from a very long time which should be filled for the proper working so that our aim of conserving our cultural heritage could be fulfilled. Not just that even the standard of laboratories should be improved as the field will otherwise remain stagnant. Also to promote the field it is very important that the Research work goes on in the required areas. It would be an encouragement if Conservation Course is introduced at the University level. The training should be given on ICCROM pattern. To improve the overall standard of the profession, Job Satisfaction is very important and for that purpose the Conservation Profession in itself should be highlighted and given more awareness. Along with all this the improved Conservation manuals should also be circulated everywhere in the Museums in regional languages so that it becomes easier for everyone to understand and apply the concepts of both Preventive and Curative conservation easily.

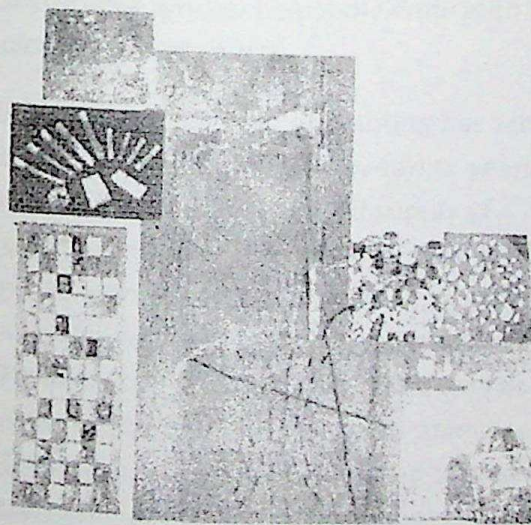
The credit for where Conservation field is today from the scratch goes to the hard work of many people in the past.

The techniques in Conservation will keep on improving and so is the work standard. In any case it is important to understand that Conservation is not the end; rather it is an ongoing process. Deterioration can only be retarded but cannot be ceased. So I would like to conclude saying that Conservation is a job of high responsibility and any conservation work should be done in such a way that it does full justice to the object so that our past remains forever available.

Evolving a Methodology for Preservation of Contemporary and Modern Paintings

C.B. Gupta

The progressive group finally dissolved in 1954 but by that time new crops of painters had come into their own. Artists like Akbar Padamjee, Tyeb Mehta, Ram Kumar, Krishan Khanna, Gaitonde started working in new medium with self assurance and made a definite stride towards Modernism-Self Expression.



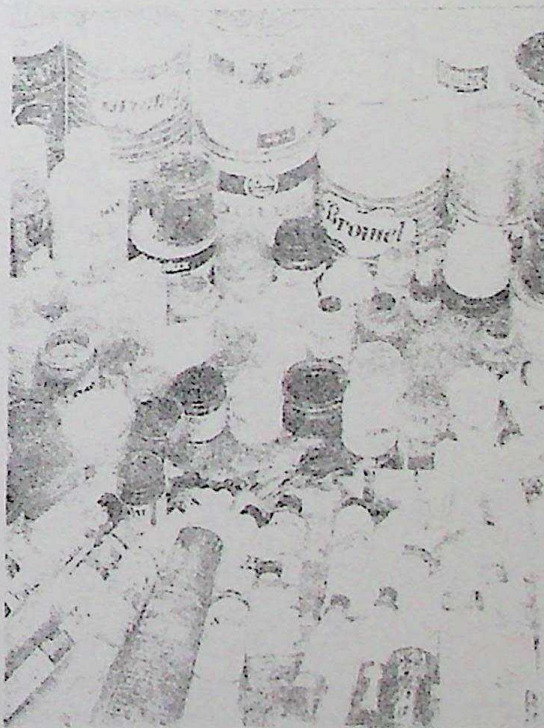
Depiction of Paintings in Mix-Media

Modern Artists of 20th century have had at their disposal both natural and synthetic material and they were free to use them. For example they had a variety of Synthetic Paint media, Support Fabric, Exotic metal alloys, quick setting Adhesives etc. Artist of 21st century are now doing experiments with paint which is meant to be used in Household and also doing a fusion like

mixing metal alloys, jute, paint etc to make a single composition.

The mix media used may react with other materials that are being used in making an Art work. The canvas has different sizing, different ground made on it. The use of commercial adhesive on canvas can prove to be harmful to the painting in long run.

The colors used these days are mostly Synthetic. After a long period of time they result in soiling, cracking and cupping .



Variety of Material used in Modern Paintings

It is often said that the moment a painting is made it begins to age depending upon the quality, combination and nature of material which has gone into its structure. A new painting in good condition may age normally or abnormally. A new painting in good condition will begin to degrade just as a result of time alone or may degrade due to the faulty material as the material goes through drying process which sets up internal stresses within structure.

All art, at some time is, Contemporary Art. Now artists have a tremendous assortment of natural and synthetic materials. Modern artists have wholeheartedly embraced the profusion of products.

Even the stylistic field of painting has seen a change. Paintings created in earlier years reflected a relatively limited supply of artist's materials. The only available paint media were waxes, plant gum, egg, milk, animal hides, vegetable oil and plant resins. Pigments came from mineral deposits or extracted from plant, insects or animals. Today, the artists are not limited to the traditional materials but may also choose from a variety of commercial paint media such as acrylics, nitro-cellulose or alkyl's as well as a profusion of synthetic pigments.

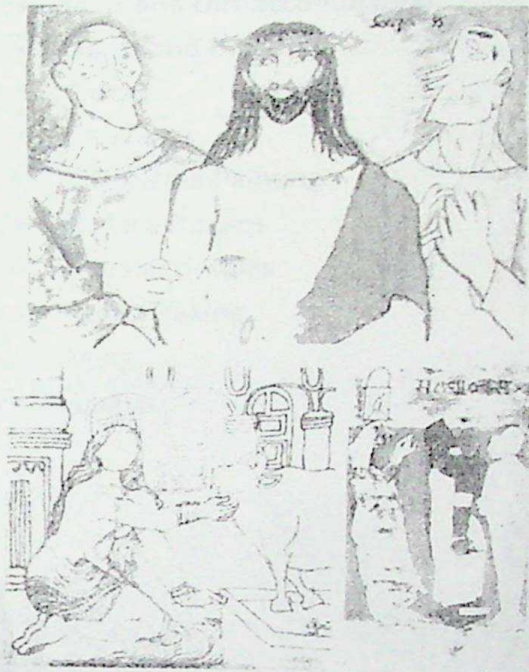
In some paintings, metal pieces such as iron, brass, aluminium, copper etc are used which can also cause a problem if they are not properly treated and stored. The media also includes pieces of wood, ply board, hard board, bamboo, cane mat, cotton etc. Synthetic materials like plastic, nylon,

thermocole, sun mica, fiber glass etc have also slowly and gradually gained a place on the paint layer of some works of art on canvas.

For adhesion various materials like gum Arabic, animal glue, starch, shellac, resin, and different natural as well as synthetic adhesives have been used in the modern day paintings. These adhesives after a long period of time show a bad effect on the paintings as they undergo chemical degradation.

If a painting has been well constructed and the artist has used sound materials in his procedure then changes are not extreme in their effects and the painting does not suffer in appearance but in contemporary paintings we see the use of various media which may increase the chances of faster deterioration.

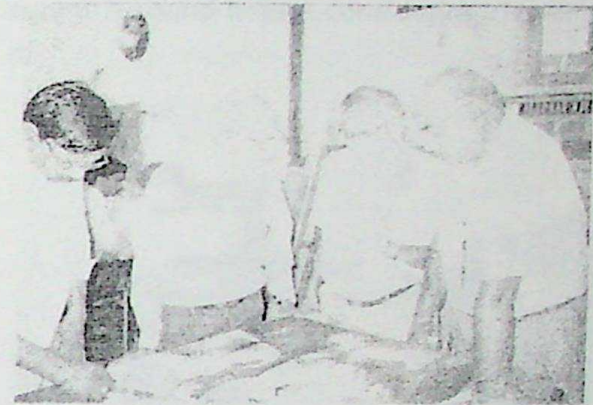
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We have worked on the works of some very famous artists of India like – F.N. Souza, B. Sanyal, Jatin Das, Jamini Roy, Shanti Dave, M.F. Hussain, Tyeb Mehta, Raza, Arpana Caur, Satish Gujral, V.S. Gaitonde etc. These paintings are mainly contemporary oil paintings and the medium used in one may or may not be similar. The pigments, colors, support, ground, varnish vary in them thus, making each painting very different in its structure. There may be impasto on some or even mix media work.

Examination of Paintings

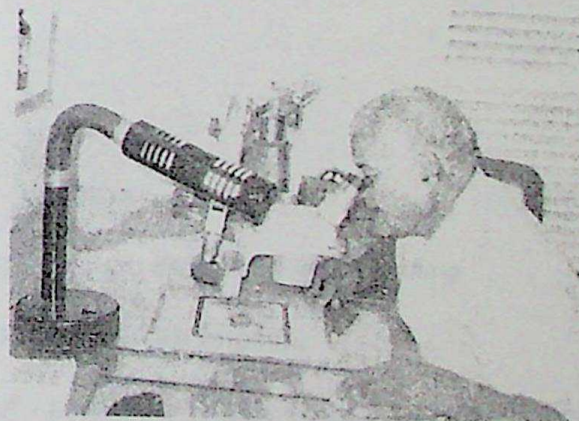
Examination of a painting is an exciting and interesting experience. It is an effort to find out and record every possible bit of information about a painting before any work is attempted.



Discussion while Examining a Painting

We have examined each painting thoroughly before treating them. A visual examination was done and then photo documentation was done on paintings that were highly damaged and needed extensive treatment.

Each phase is apt to run into the other. The final total of all the information gathered has to be interpreted and the treatment should follow after that.



Examination of a Painting

Problems encountered

Some common problems seen in contemporary paintings:

- Dust and Dirt accumulation
- Dents and Bulges
- Cracks
- Cleavages
- Mix Media Painting
- Surface Ripples
- Tears and Holes
- Heavy Flaking
- Aging
- Fungus



A highly damaged Tyeb Mehta's Painting

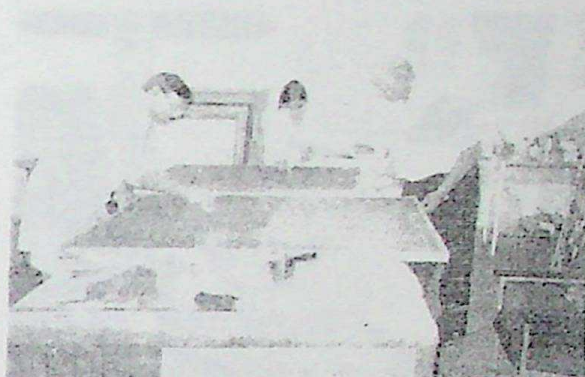
Treatment

While working on contemporary oil painting we adopted the following methods for the treatment of various kinds of paintings by some very famous artists.

Support to the painting during cleaning

Canvas should be supported from the behind to prevent its surface from sagging down under the pressure of cleaning. Examine the surface thoroughly to make

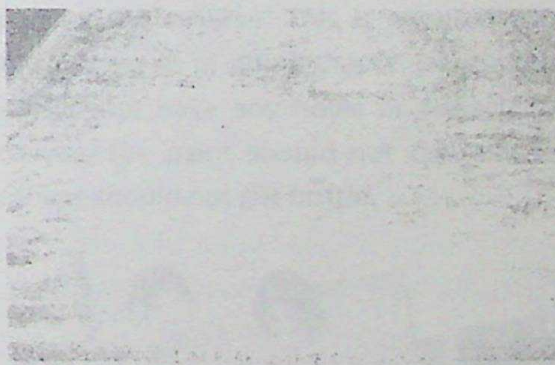
sure it is sound before considering cleaning it.



Cleaning a Painting

Not all colors in a painting clean the same way

Certain colors seem more solid than others. White and mixtures of colors with white are sensitive and black is very touchy.



Comparison Before and After Cleaning

Paintings with Impasto

If paintings which have impasto gets damaged then a slightly different preparation must be made for its treatment so as to prevent the ridges of paint from breaking off under pressure or if flattened out. The working surface should have a soft

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cloth cushioning of foam or felt so that the softness of the material is keeping the impasto safe.



Cleaning of an IMPASTO Painting

Badly cracked surfaces are dangerous to clean

Cracks are always present in a painting even if they are not visible with the naked eye. No matter what mixture is used to clean the painting. If the surface gets too wet then the wetness will seep down through the cracks into the structure and tend to loosen the bond between the various layers.

Facing to a painting

Usually not all the surface of the painting is equally weakened, some portions remain solid. A protective facing with a thin tissue paper is applied to the broken surface of a picture with a mild liquid adhesive which unites the little segments of loose film from the front to make up for the lack of solidarity on their reverse side. Putting the facing to the paintings was not a method of

repair. It was to prevent further losses in the paint layer until a repair is made.



Facing to a Painting Giving

Vacuuming dirt off the back of the painting

The reverse of a painting is vacuumed with the soft brush attachment of the vacuum cleaner. The little round brush is passed back and forth lightly across the exposed part of the reverse. This is adopted when the canvas is in good shape. The painting should not have any holes or tears in the canvas, the paint should not curl and the canvas should not get brittle.



Vacuum Cleaning of Back of the Painting

Surface ripples

Bulges take the form of large ripples all over the painting and can run diagonally ending at the corners of a painting. The canvas being loose on its stretcher frame causes this. This condition should be corrected as soon as possible. Besides being bad to look at, these ripples bend the canvas and eventually make the paint film crack under the strain of the curves. Provided the painting is not already cracked or torn, it is easy to rectify this fault.

Superficial Cleaning

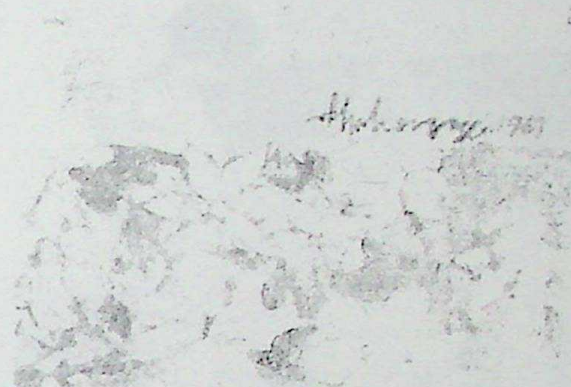
Air carries a heavy load of greasy soot which gets deposited on the paintings. If the painting has a varnish film then this dirt and soot gets deposited on that and is fairly easy to remove without disturbing the varnish film. This is called "Superficial Cleaning" and there are several ways to do it.

Cracks

The age cracks are caused by changes outside the paint layers. Cracks of similar nature can be caused by mechanical means, such as pressure on the obverse or the reverse of the paintings. It is only when the aging cracks open wide that restoration work is done to secure the paint layer onto the canvas. A Wax-Resin mixture is used to help in the consolidation of flaking.

Drying cracks occur when the paint film is very thick and over-balanced with oil. This can cause the surface to wrinkle. When a crack opens – it is necessary to fill up with Putty so as to even out the surface. Putty is

usually applied after the layer of paint is secured.



Painting depicting Cracks

Cleavages

The cleavages are formed when the bond between the first layer and the support is broken.

Abnormal aging

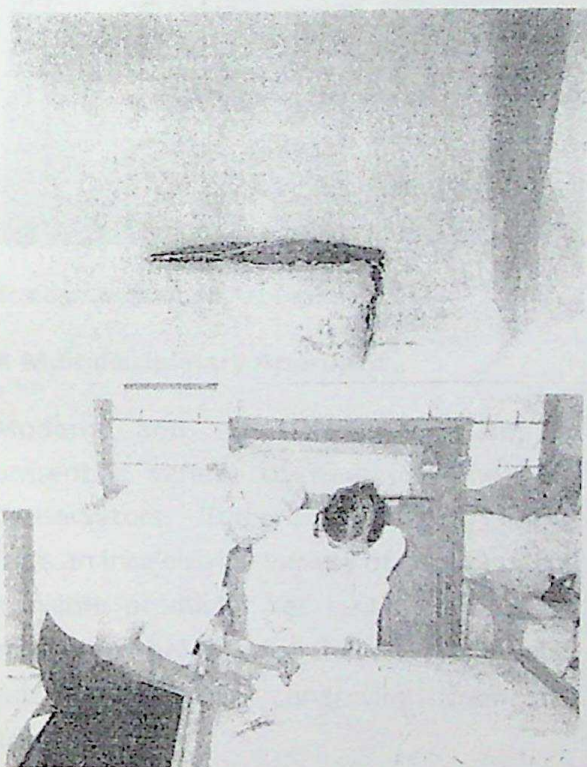
Abnormal aging could be because of the material used. Some materials are incompatible and when used together can cause problems. In fact even when some of the mix media are used, they cause cracks in the paint later, which can affect the strength of the painting

Lining and Relining

Lining to be done is either Strip Lining – done when the edges are weak or torn and they need strengthening and Full Lining when the whole canvas is in a weak and fragile state and it needed extra support.

Patch Repair

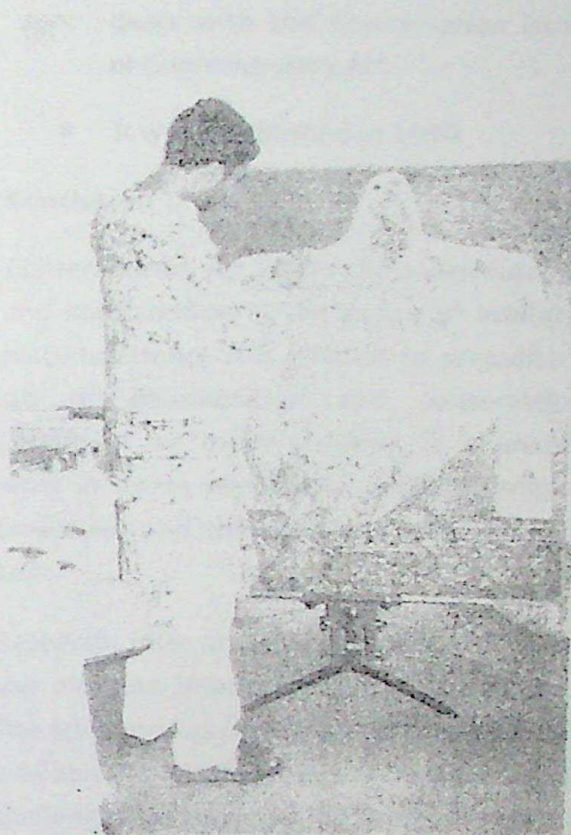
Loss of canvas or the cloth can cause a lot of damage to the painting. Thus, it is important to fix the tear or hole so as to avoid further damages. A canvas usually of the same strength as the canvas is attached to the back of the canvas. The cloth preferably a little bigger than the hole or tear is chamfered and then stuck to the canvas with the help of an adhesive.



Repair of Tear

Retouching

Retouching is an essential part of the restoration work. A few places where the losses are filled are retouched. A similar color is made and applied to the paintings to make them look better.



An Artist doing Retouching

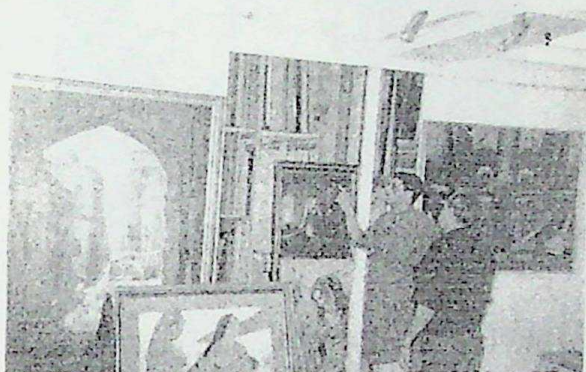
Storage

Proper storage is the prime importance of contemporary paintings. These paintings with their innumerable media often pose as a problem in storage. Paintings with impasto and with some mix media stuck to them have to be kept carefully in racks so as to avoid abrasion.

For the proper storage of the modern paintings it is necessary to adhere to the following points;

Selection of a suitable space, examine the space for air, light, dampness, insect activity, humidity.

The treatment employed should be best for the immediate preservation of the painting. It should also be reversible so that any future removal of the work can be accomplished without in any way endangering the original painting.



Storage Area at an Art Gallery

A Multidisciplinary Approach

Modern and Contemporary Paintings present a variety of new challenges to Conservators. Today's Artists can choose from an incalculable variety of commercially available products. Yet neither the Long-term aging behavior of these materials nor safe methods for conserving them are known.

Given the magnitude of the task, multidisciplinary collaborations on National and International levels are essential for preserving modern and contemporary paintings.

INCCA

- INCCA (International Network for the Conservation of Contemporary Art) is the American Society that

deals with the Conservation Issues of Contemporary Art.

- It was Established in 1990.

Conclusion

Contemporary Art works show permutation and combination in the usage of available material. Hence it is difficult to prejudice a set of deterioration and conservation treatment as every painting is a unique work in terms of material used, technique employed and the condition in which it is kept.

Research into artist's materials and their use plays an important role in conserving. The tremendous increase in the number of available materials has created new challenges for conservation professionals.

Although oil remains an important binding medium in artist's paint, today synthetic resins are used with increasing frequency. This was started during mid of the 19th century, when artists such as David Alfaro, Jackson Pollock and Pablo Picasso used commercial or industrial paints based on synthetic resins.

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* A new Bill introduced in 1952

Conclusion

Consequently, it was not possible
to make a contribution to the work of the
Commission. Hence it is difficult to say
whether the Commission's work was
successful or not. It is a matter of
fact that the Commission's work was
not successful and the Commission's
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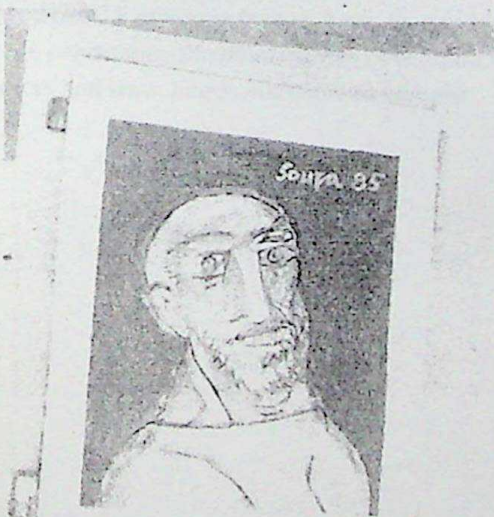
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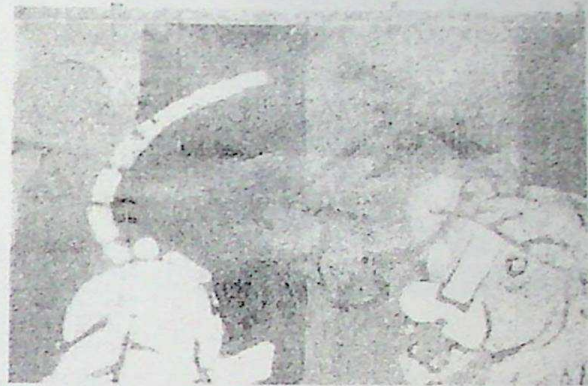
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Case Study- 1 : Artist : Souza*Before*

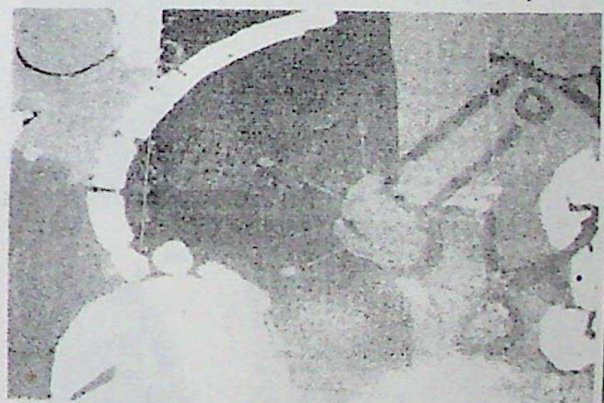
Description : Wrinkles and Creases in the paper. Loss of paper at the upper right corner

*After*

Description : Cleaning and Mounting by acid free hand made on paper helped the painting regain its charm.

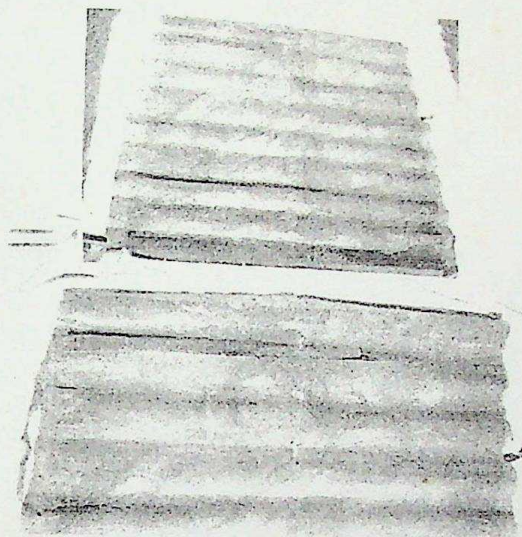
**Case Study 2 : Artist :M.F. Hussain Title :
An elephant protecting her child from a
lion and tiger***Before*

Description : Deposit of Dust, dirt, cement, paint splashes and water stains on the surface. Loss of metal sheet at some places due to rusting along with horizontal wooden batons in lower side.

*After*

Description : The painting is now free of all the damages. Rust is cleaned from the surface using appropriate solvents. Precaution was taken to avoid spreading of rust to the paint layer while cleaning. Retouching is done to match with the surrounding.

Case Study- 3: Artist: Sarda Ukil : Title :
Mother & Child



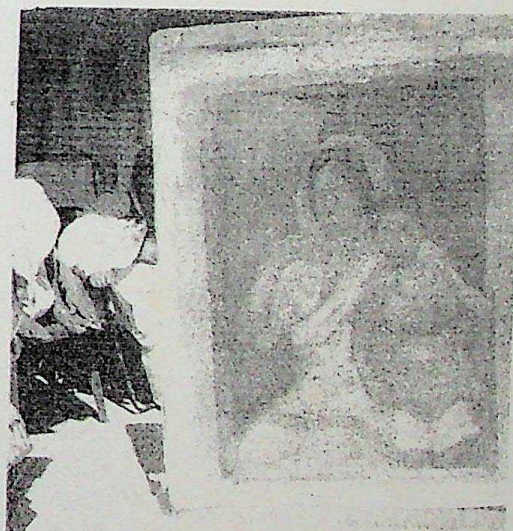
Before

Description: Painting in fragile state. Due to bad storage conditions, the painting has developed lots of cracks and thus, needs intensive treatment.



During

Description : The painting is flattened and the cracks are mended.



After

Description: Mounted on cloth, the painting looks good now without any ricks or any losses. In the care of paintings, it is important to consider a continuance of existence.

